Paper
TRADE JOURNAL

Dec. 21, 1950

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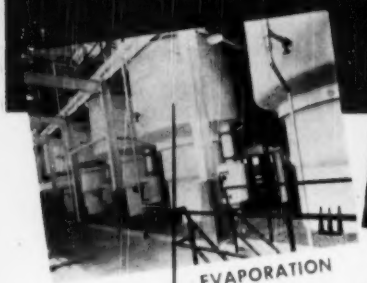
IS WORKMEN'S COMPENSATION A PROBLEM TO YOU?

WHAT IS THE EFFECT OF VISCOSITY?

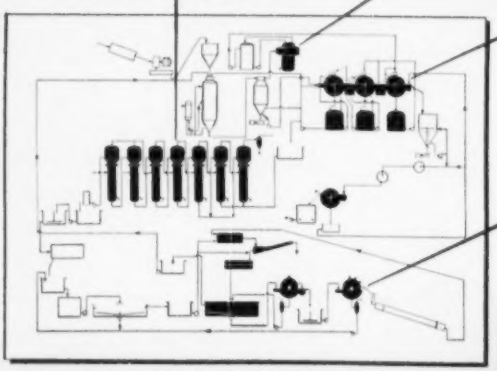
Here Swenson Can Help You...



EVAPORATION

HEAT RECOVERY

PULP WASHING



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- Evaporators
- Pulp Washers • Deckers • Filters
- Digester Blow Condensers
- Surface Condensers
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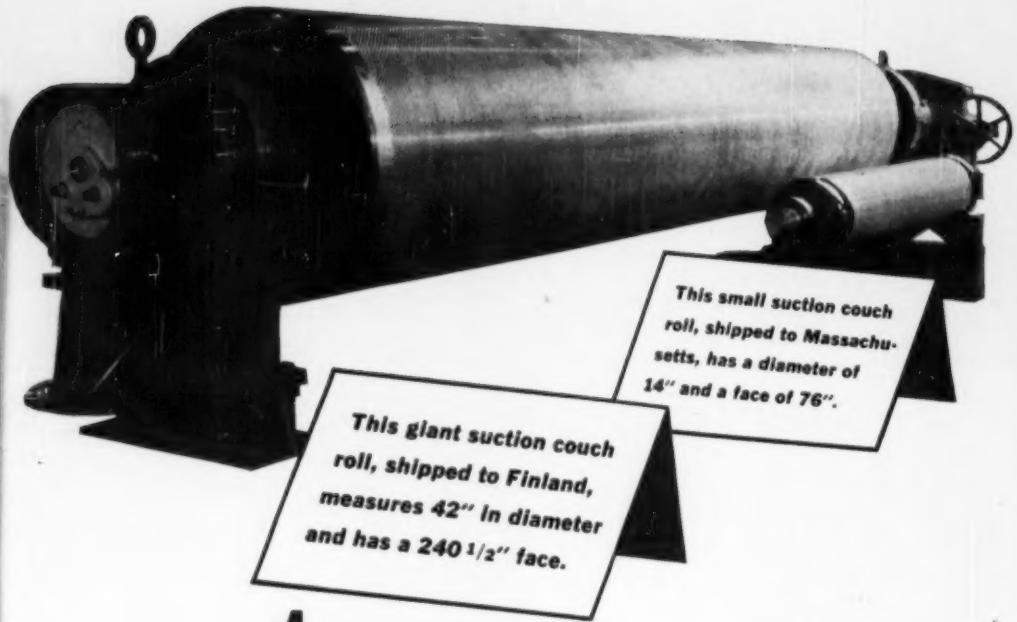
The LONG and the SHORT
of Downingtown preference throughout the world


This small suction couch roll, shipped to Massachusetts, has a diameter of 14" and a face of 76".
This giant suction couch roll, shipped to Finland, measures 42" in diameter and has a 240 1/2" face.

As the photograph suggests, Downingtown Suction Couch Rolls are made in a wide range of sizes but, large or small, they have the same high quality and dependability. Ever since 1923, when we introduced the Kilberry roll to the industry, we have pioneered in modern suction roll development. Today we have the most complete line of this equipment in the world. Remember, when it's a question of efficient water removal, ask Downingtown.

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Paper TRADE JOURNAL

E. P. NUTTALL
Associate Editor

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Vol. 131 **DECEMBER 21, 1950** **NO. 25**

FEATURES

	Page
Freight-Rate Appeal	11
Improvements at North Charleston Plant of Westvaco	12
November Newsprint Report	14
Protective Coatings Prevent Pulp Mill Corrosion	18
How Much Does It Hurt in Dollars?	21
Viscosity	26
Together We Work	28
TAPPI Preliminary Program	43

DEPARTMENTS

Our Business	7	Imports	41
Trends	9	Materials	41
News of the Week	11	Merchants	42
Industrial Section	18	Associations	43
Patent Abstracts	35	New Equipment	44
Suppliers	38	New Literature	44
Converters	38	Obituaries	45
Financial News	39	Production Ratio Report	46
Prices	40	Classified Advertising	48
		Advertisers Index	59

DATES TO REMEMBER

JANUARY 9: Metropolitan Group, TAPPI, Monthly Meeting, Fraunces Tavern, N. Y. C.

JANUARY 15-18, 1951: Plant Maintenance Show & Conference, Public Auditorium, Cleveland, Ohio.

JANUARY 22-26: Tenth International Heating & Ventilating Exposition, Commercial Museum, Philadelphia, Pa. (Am. Society of Heating & Ventilating Engineers).

JANUARY 24-26: Canadian Pulp & Paper Assn., Mount Royal Hotel, Montreal, Que.

FEBRUARY 19-22: Technical Assn. of Pulp & Paper Industry, Annual Meeting, Hotel Commodore, N. Y. C.

FEBRUARY 19-22: American Paper & Pulp Assn., Annual Meeting, Waldorf-Astoria Hotel, N. Y. C.

FEBRUARY 21: New York State College of Forestry, Paper and Pulp Alumni: Annual Luncheon, Hendrick Hudson Room, Roosevelt Hotel, N. Y. C.

FEBRUARY 21: University of Maine, Paper and Pulp Alumni; Annual Meeting, Biltmore Hotel, N. Y. C.

NEXT WEEK

A valuable description of the instrumentation in one of the most modern pulp and paper mills in the U. S. is found in "Instrumentation at Coosa River Newsprint" by J. W. Hughes, District Manager, Brown Industrial Div., Minneapolis-Honeywell Regulator Co.

An interesting discussion of characteristics to be looked for in pulpers is found in "The Selection of a Pulper" by Jacob V. Edge, Downington Mfg. Co.

The second installment of "Viscosity" by Neill MacCoull, contains additional contributions to the knowledge and measurement of fluid flows.

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With a dirty paper stock cleaner capable of removing close to 100% of all sand, grit and other matter that's heavier than water.

With a device that will eject the rejects 60% dry and effect important water savings.

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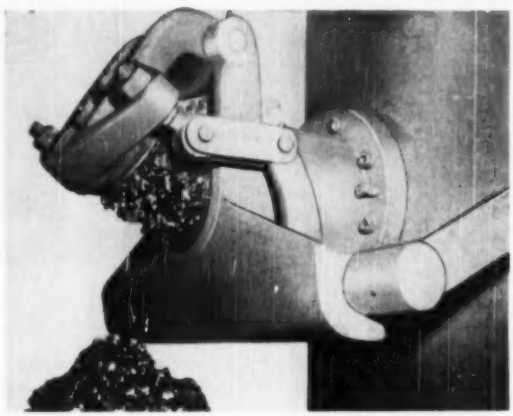

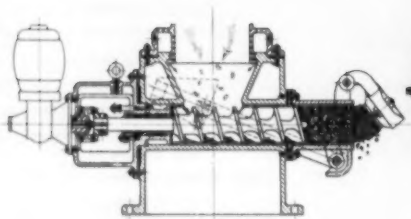

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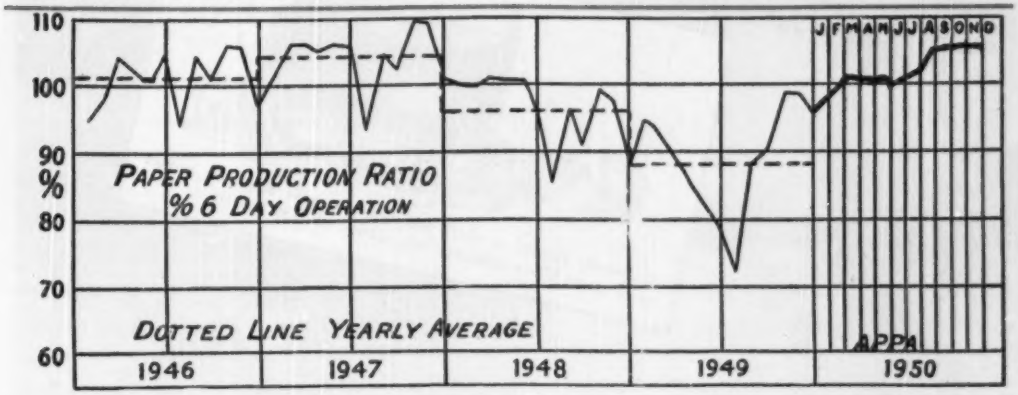
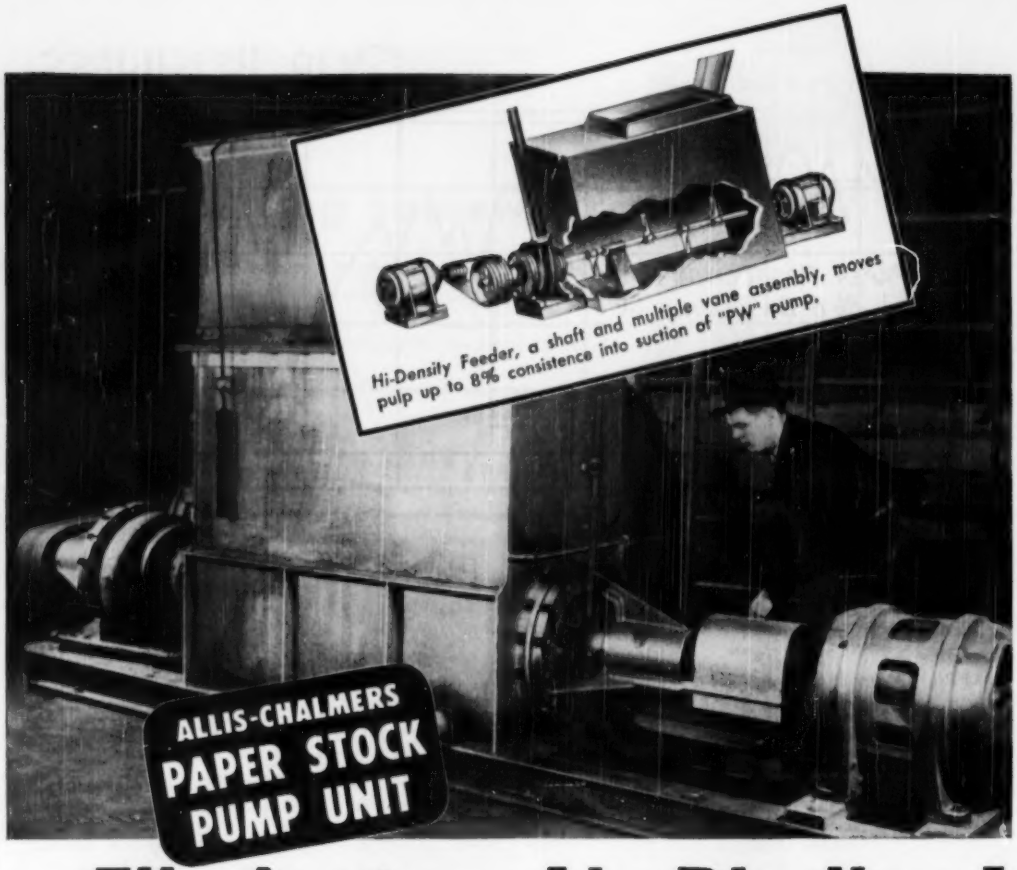
Weekly Brief of Important Figures

OUR BUSINESS



Source	Production	WEEK ENDING Dec. 9, '50	Nov. 11, '50	Dec. 10, '49
APPA	Paper Production percent 6-day Capacity	106.7	107.1	99.9
	Unbl. Kraft Paper Production percent	98.1	106.1	91.4
NPA	Paperboard Operating Ratio percent inch hours	106.0	101.0	96.0
		Oct. 1950	**Sept. 1950**	**Oct. 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ..... Tons	841,000	766,000	765,612
	New Orders ..... Tons	836,000	820,000	803,535
	Unfilled Orders ..... Tons	899,200	932,000	497,820
	Shipments ..... Tons	850,000	772,000	768,592
		Nov. 1950	**Oct. 1950**	**Nov. 1949**
NPA	Paperboard Production ..... Tons	1,168,958	944,672	882,800
	New Orders ..... Tons	1,225,369	931,828	887,000
	Unfilled Orders ..... Tons	722,046	694,741	429,800
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	223	221	188
	Durable Mfg. Index	253	249	200
	Nondurable Mfg. Index	199	198	178
	Chemical Products Index	269	263	238
	Mfg. Food Products Index	187	190	190
	Printing and Publishing Index	173	161	159
ODC	Magazine Advg.-Printer's Ink Index	338	341	301
	Retail Sales Combined Adjusted Index	331.2	347.3	306.9
	Drug Index	227.1	224.6	222.4
	General Merchandise Group Index	401.0	437.0	363.8
	Grocery and Combination Index	390.5	402.2	368.1
	Prices Index			
BLS	Consumers Price Index[1]	173.8	173.0	169.6
	Wholesale all Commodities[2]	169.5	166.4	153.5
	Wholesale Foods[2]	177.2	174.6	162.0
	Commodities other than Farm Products and Foods[2]	159.2	155.5	145.3
	Wholesale Pulp and Paper[2]	167.1	163.9	156.5
	Purchasing Power of Dollar, Consumers Prices[1]	48.0	47.8	49.0
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	394.0	367.4	323.0
	Unemployment Compensation Initial Claims (M)	558	641	1,013
	Miscellaneous Carloadings–Thousands of Cars	1,963	1,574	1,714
	Electric Output (Million KW hr.)	32,650	33,874	28,369
PTJ	Average 32 P & P Common Stocks as of Dec. 12	$32.95	$33.96	$30.97
	Average Indicated Dividends Common Stocks as of Dec. 12	$ 2.54	$ 2.53	$ 2.31

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—October 1950 Estimated Figures
° Latest Month Available on Request


Hi-Density Feeder, a shaft and multiple vane assembly, moves pulp up to 8% consistence into suction of "PW" pump.
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AND OTHER EQUIPMENT FOR PAPER MAKING . . .

ALLIS-CHALMERS

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, December 20, 1950.

"Fair Standards" Rule

Washington commentary on price control measures, as announced on December 15 by President Truman, centers about the phrase "fair standards" which are set for the interim rule before full regulation. What these "fair standards" consist of no one seems sure; yet a departure therefrom will bring mandatory price rollbacks.

Using a similar term in an article on inflation curbs, Professor Sumner H. Slichter writes that "Controls may retard the rise in prices, but adjustments are needed to assure *fair play*."

Noteworthy as a bent in progressive business thinking, sound as is the belief that what meets man's acceptance needs little enforcement, to a civilization whose woes are rooted in man's unfairness to man, this rule of "fair standards" of price control sounds overmuch like Christmas wishing. The term unfortunately is subject to the human equation.

Waste Paper Prices

What, for example, are "fair standards" in rocketing waste paper prices! Ask a group of dealers and packers how such a rule would work. Ask paper and board mills what they consider a "fair standards" rule. Not all business on either hand is motivated by the belief that enduring satisfaction comes from fair treatment of the other fellow.

Urgency of demand for pulp substitutes is playing havoc with waste paper prices. A study of comparative prices in the N. Y. market points up a 200 percent advance in most grades since early June. In view of known inadequacies of pulp supply to current demand, even heavier emphasis is likely to be placed on waste paper supplies and prices. Dealers and mills express themselves freely about the matter, even hint loudly that a rollback must come soon.

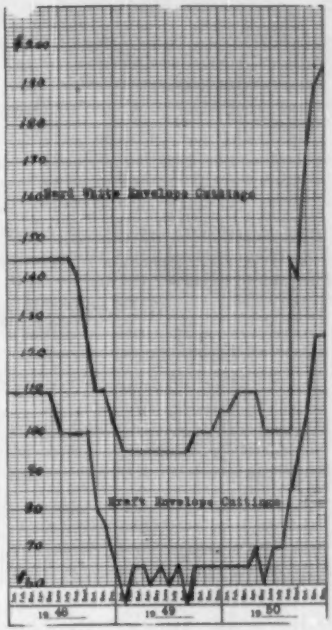
TABLE I

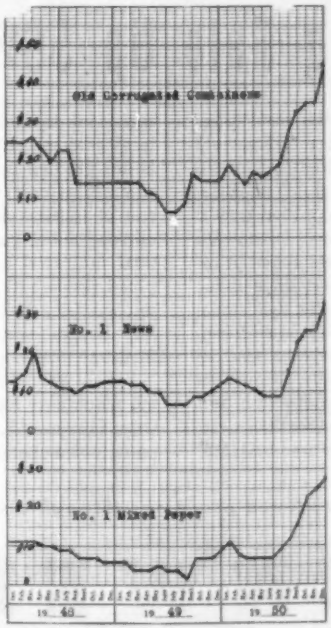
Comparative Waste Paper Prices
New York Market

	June 7	*Dec. 13*
No. 1 Mixed Paper .. ....$	7/69	30/33
Boxboard Cuts	8/9	25/30
Mill Wrappers	10/11	30/35
No. 1 News	9/11	35/37
Over-issue News	13/14	35/—
Corrugated Containers	18/20	52/55
New Corrugated Cuts	20/21	52/55
Double Kraft Ld. Corr. Cuts..	35/37	90/100
100% Kraft Corr. Cuts	n. a.	125/140
Used Kraft Bags	30/34	80/90
No. 1 Brown Kraft Paper ..	32/35	80/90
Super Resorted Br. Kraft ..	37/40	100/105
New Br. Kraft Env. Cuts ..	70/75	160/175
New Br. Kraft Cuts	55/60	150/170
No. 1 Gdwd. Shvs.	25/30	60/65
White Newsblanks	55/60	105/110
No. 1 Flyleaf Shvs.	27/30	80/85
No. 1 Soft Wht. Shvs.	65/70	175/190
Super Soft Wht. Shvs.	90/95	190/200
Hd. Wht. Shvs.	85/90	185/195
Hd. Wht. Env. Cuts	100/110	200/215
New Manila Env. Cuts	65/70	140/150
Col. Tab Cards	40/42	90/105
Manila Tab Cards	70/75	150/170
No. 1 Mixed Ledger	30/32	85/95
White Ledger	45/50	125/130
Mixed Books & Mags.	13/15	45/50
No. 1 Repacked Hvy. Book & Mags.	25/30	55/65

N.B.—n.a. — Not available

Trend of Waste Paper Prices
New York Market
Pulp Substitutes





Trend of Waste Paper Prices
New York Market
Low Bulky Grades

"Fair Standards" Rollback

If for self-interest alone, the mills do well to consider the need for keeping the waste paper industry on a profitable basis. With Scandinavian shipments facing "Closed Water" season, and commitments sharply cut back, the months ahead could exert great pressure on diminishing stocks of pulps and waste papers. Faced with increasing defense requirements, the steady flow of waste paper substitutes could mean the difference between life and extinction to the small non-integrated mill.

A steady flow of waste papers is assured so long as collecting and packing are profitable operations. No rollback should be set at levels which could interfere with that flow.

Price curves on high grade substitutes and low bulky grades are provided for a "fair standards" study. No price freeze or rollback should be reached, however, without further review into the 1947 highs which on January of that year stood at $19 for No. 1 *mixed*, $25 for folded news, and $100 for No. Hard Whites.

Paper and Board Prices

Paperboards.—Higher prices for set-up and folding boxboards which followed the latest lifts in waste paper prices amount to $5 to $15, varying by grade. In view of the mercurial temper of the raw materials market, most mills have withdrawn price lists and are billing at price prevailing at time of shipment.

Liners and Corrugated: Unconfirmed are reports that 42-lb. kraft liners and corrugating medium have advanced $5 a ton, effective January 1.

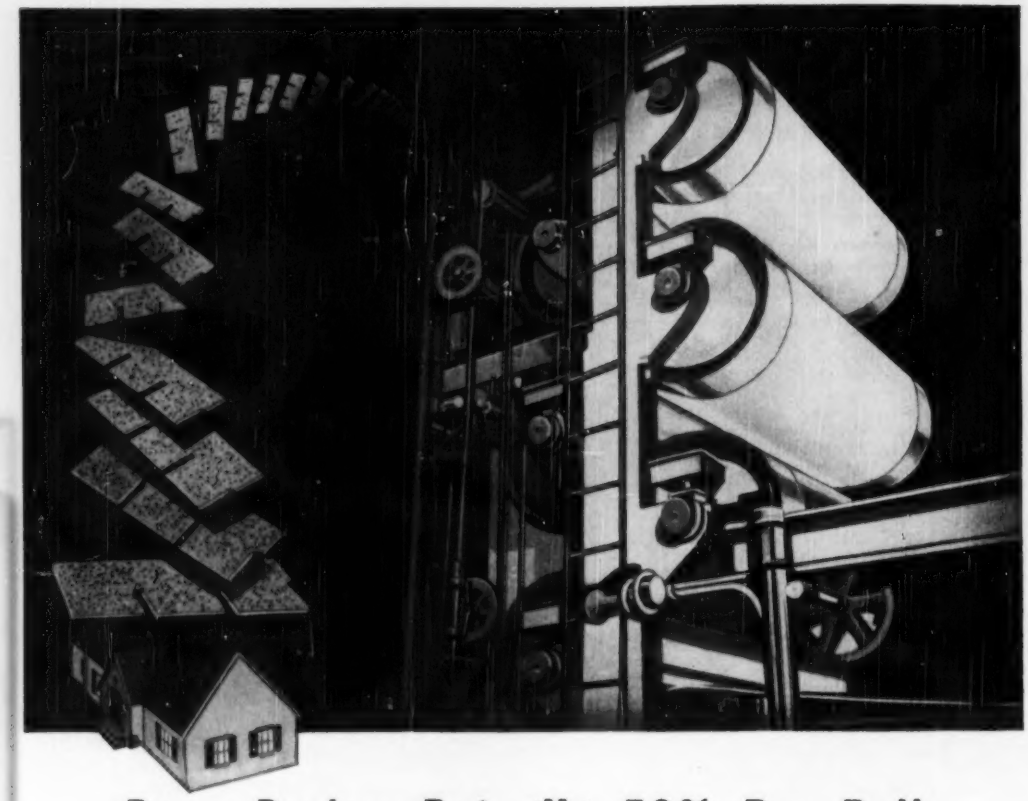
Kraft Wrapping and Bag.—Rises in kraft wrapping and bag stock also are reported. Some tonnage of kraft wrapping is moving at spot prices from mill to dealer, it is said.

Book, Bonds, Offset, Ledgers, Offset.—All prices have been advanced from $10 to $15 by most mills. The rises are based on announced and anticipated rises in wood pulp prices for the first quarter, also on greatly-increased costs of cottons. (For wood pulp prices, see *Prices* page.)

Paperboard Production (Tons)*

	Dec. 9 1950	Dec. 2 1950	Dec. 10 1949
Production	243,297	232,728	210,286
New Orders	243,978	295,064	203,493
Unfilled Orders ...	721,122	722,046	421,332

Source: NPA.



Runs Drying Rate Up 56% Per Roll

Drying rate up 56% per roll—the result after The Ruberoid Company added a Lukenweld Drier Section on an existing machine to increase felt production. The 8-roll addition, of stack design because of space limitation, added only 6 feet to the length of the machine. Lukenweld Jacketed Steel Drier Rolls also saved space by reducing the number of rolls required, since under *identical* pressures they are *better* heat transfer units than driers of other design. In addition, this Lukenweld Drier Section—the second at Ruberoid—operates more efficiently because its functional design gives optimum strength and rigidity through structural shape rather than mass.

Lukenweld machinery, offering predictability, resistance to shock, high strength, design flexibility and weight savings, not only produces a better product but also amortizes itself in lower production costs. These advantages are the result of Lukenweld's specialized manufacturing and engineering experience combined with practical industrial application. Such know-how—plus Lukens' 140 years of experience in producing specialty steels—is back of every Lukenweld job. Result: maximum quality . . . maximum investment return.

For information on drying and other processing machinery for the pulp and paper industry, write Lukenweld, Division of Lukens Steel Company, 509 Lukens Building, Coatesville, Pa.

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LUKENWELD

A DIVISION OF LUKENS STEEL COMPANY

LUKENS

News of the Week

Paper TRADE JOURNAL

CONTAINER RUNS RED BANK

Container Corp. of America, Chicago, Ill., on November 20 placed into operation the two board machines at the Red Bank mill, Cincinnati, Ohio, which have been idle until recently. Both machines have six cylinders and the trims are 108" and 126". Container Corp. purchased the mill from International Paper Co. early in October, with plans to operate the mill if demand warranted.

BAUM APW PRESIDENT

ALBANY, N. Y.—Isidor Baum of the Baum paper manufacturing interests of New York City is the new president of APW Products Company, Inc., here.

Other new officers of the firm, taken over recently by the Baum interests in a transaction of about $1.5 million, are: vice-president, Seymour I. Baum; treasurer, Sarah Baum; secretary, Morton J. Baum. The four were elected directors, along with F. C. Nicodemus, Jr., New York City attorney.

Seymour Baum said the Baum interests gained control of more than 50 percent of the company's interests.

George C. Bishop, secretary-treasurer of the firm under the old management, has resigned after nearly 32 years of service with APW. He said he planned to go into business in Pittsfield.

JUDGE FINE-PRINTED SPECIMENS

The board of judges in the W. C. Hamilton & Sons November contest for fine printed specimens are the three men seated (from left): C. William Schneidereith, senior partner of Schneidereith & Sons, Baltimore; Raymond Blattenberger, senior vice-president of Edward Stern & Company, Philadelphia, and Abraham Colish, president of A. Colish, Inc., New York. Standing are the top officials of W. C. Hamilton & Sons (from left): Lane Taylor, executive vice president; Hugo H. Hanson, president; and Joseph H. Dunton, vice president in charge of sales. Winning pieces are spread before them on table following a dinner at which the successful entries were announced in Philadelphia's Union League.

CHLORINE DISTRIBUTION

WASHINGTON — Outlines of a proposed order to assure equitable distribution of rated defense orders and provide for fair distribution of remaining supplies of chlorine among ordinary users, were made public last week, following a meeting of the Alkali-Chlorine Industry Advisory Committee with NPA officials here.

It was indicated the proposed order, besides determining the procedure as to rated orders on the industry, would make adequate provision for chlorine supplies for water purification, and for distribution of supplies of merchant chlorine among ordinary users, under a formula to be worked out.

MAY REDUCE FREIGHT RATES

OTTAWA—Reduced freight rates for Newfoundland industry may result from information now being compiled by Associated Newfoundland Industries for the Canadian National Railways General Freight Agent Charles McCay.

Information includes name of commodity, points of origin and destination, quantity, whether shipped in carload lots, and whether there are competitive truck and water rates. Reduced rates would result in considerable savings on heavy freight movements for local industries.

FREIGHT-RATE APPEAL

OTTAWA — An appeal by the seven provinces, all except Quebec, Ontario and Newfoundland, against the 20 percent freight-rate increase in Canada has been rejected by the Cabinet, according to an Order-In-Council passed by the Canadian Government. It is expected that a further rise in freight rates may be coming if the railways are called upon to raise wages following arbitration proceedings.

The Canadian Government has refused either to revise the freight-rate awards granted to the railways in the past 14 months or to instruct the Board of Transport Commissioners to revise them. The increases were granted to the Canadian railways in various stages between September, 1949, and last May, coming into effect progressively, and they are estimated to yield about $60 million. These increases were sought by the railways after they had granted a wage increase of 17 cents an hour in 1948.

However, following this latest move, the pulp and paper industry now hears that another appeal for higher freight rates in Canada is taking shape since the president of the Canadian National Railways, Donald Gordon, has already hinted strongly that, if the railway workers are to get a new wage increase such as they have requested and a 40-hour-week as they are seeking, a further rise in freight rates is inevitable. At the moment, Mr. Justice R. L. Kellock of the Supreme Court of Canada, has under advisement representations by the workers and the railways, and it is expected that his arbitration findings will be announced shortly. The extent of his award may be a determining factor in the amount of new freight-rate increases to be imposed by the railways.

ADAMS CONVERTING SOLD

MANISTEE, Mich.—The Adams Paper Converting Co. has been sold to Bradley Higbie and Arthur Boschan, both of Detroit. Former owner was Chester L. Adams.

Improvements at North Charleston Plant of Westvaco

Backed by extensive and costly preliminary work throughout the mill, the No. 1 board machine resumed production at the North Charleston plant of West Virginia Pulp and Paper Co. after a shutdown of 13 days for a major rebuilding job.

The machine had been idle since November 27 when mill work crews began fitting it with a new stock furnish system, a complete new Fourdrinier section, believed to be the longest in the world, an improved press section and additional dryer capacity. The improvements are the first major ones to be made on the machine since it began operations in the summer of 1937.

L. Frank Thompson, newly appointed manager of the North Charleston plant, said the first results from the improvements on No. 1 machine would be a better quality of product and a better balance in the production of kraft board and paper. In time, he said, production increases are expected.

Before it was overhauled No. 1 machine was making an average of 486 tons of kraft liner board per day. The plant's other machine, designated as No. 2, has been producing an average of 232 tons of kraft paper and board per day.

The rebuilding of No. 1 machine completes the third phase of a broad mill improvement program begun 18 months ago. Officials stated that the first aims of the program are to increase the efficiency of the operation and the quality of product, through more effective controls provided by modern equipment installed throughout the mill, and to lay the foundation for increased production of pulp and paper.

To maintain its operations at a high competitive level, the company had to buy considerable new equipment to replace or supplement machinery that had become less efficient with time, some through wear and tear that comes from constant 24-hour operation and some through comparison with advancements made in paper mill equipment during the 13 years since the Charleston plant began operations.

"Some of the individual installations being placed in operation are in the million dollar class," Mr. Thompson explained, "and it will take years of efficient operation and good earnings to recover the large investment we are making."

In the first phase of the mill's improvement program, the power plant was enlarged and improved to provide additional electric and steam capacity for the new operations. These improvements included the installation of a new steam generator capable of producing more than 300,000 pounds of steam an hour, and a new 12,500 KVA electric turbine, plus improvements to existing equipment.

At the same time much heavy new equipment had to be installed and older units improved in the recovery department, which provides about 50 percent of the plant's steam capacity while recovering chemicals from spent cooking liquor for re-use in the pulping process.

New installations include two large recovery units, each capable of processing liquor from more than 300 tons of pulp daily, while providing more than 220,000 pounds of steam per hour. An older unit is being rebuilt to increase its recovery and steam capacity.

As additional electrostatic precipitator, capable of collecting almost 50,000 pounds of dust in 24 hours, has been installed to remove chemicals from the flue gases of the new recovery units.

Other recent recovery installations include a new lime kiln, 10 feet in diameter and 200 feet long, with a capacity of 125 tons per day, and a lime mud washer used in the production of white liquor for the pulping process.

One of the larger projects yet to be completed includes the revamping of two evaporators which concentrate the spent cooking liquor in the first step of the recovery process.

The second phase of the improvement program came with the installation of new and efficient equipment at the head of the pulp mill line. This project covered the installation of a new barking drum, log conveyors and a new chipping operation, which included construction of a new building and installation of two giant 10-knife chippers, measuring 110 inches in diameter.

Now that the machine rebuilding is done, the mill will proceed with plans to provide additional refinements in the pulp mill, designed to give that division the highest quality product and boost its capacity from 75 to 1,000 tons per day.

The major improvement in the pulp mill will be a new continuous, vacuum filter washing system to replace a less efficient batch washing system that has been in operation since the mill started. A total of nine large filter washers will be installed. The first line of three washers is scheduled to go into operation around the first of the year.

A new digester, giving the plant a line of nine pulp cookers, also will be ready for operation about the first of the year. The additional digester will give the plant ample capacity for cooking 1,000 tons of good quality pulp per day.

Plans have been authorized to expand the pulp mill screen room to attain greater capacity and better quality. Three new vibratory screens of a rotary type will be placed in operation to supplement the present system of flat screens used in the final processing of pulp.

One of the big jobs connected with the rebuilding of No. 1 machine was designing and building a new stock preparation system capable of furnishing pulp and water slurry in sufficient quantities for high-speed operation and at the same time maintaining a proper consistency for quality production. As a first step three new refiners, complete with stainless steel piping, were installed in June to replace the last three Jordans in operation in the mill. This change made 12 highly efficient stock refiners available for the No. 1 machine and 8 for No. 2 machine.

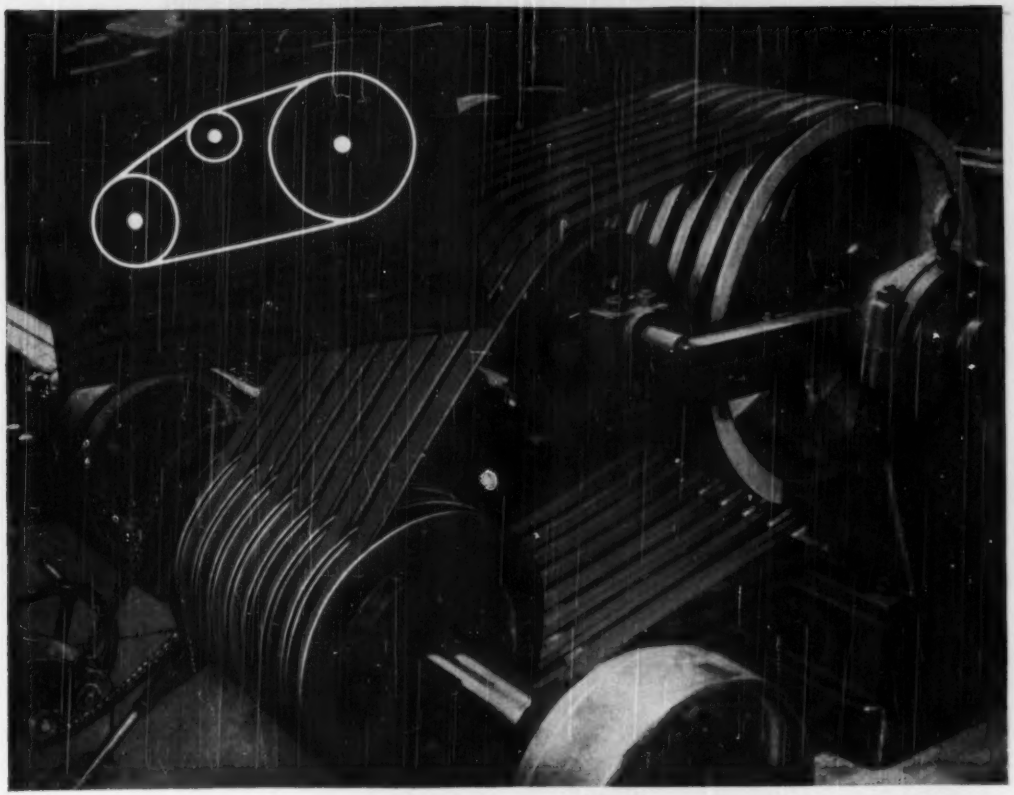
During the shutdown a new fan pump, capable of moving 40,000 gallons of slurry a minute, was installed at the head of No. 1 machine. New equipment at the wet end of the machine included a flow-evener of latest design and a pressurized headbox which automatically maintains a constant stock level, with air pressure and vacuum regulating the rate of flow onto the machine wire. This equipment is expected to contribute much to the better quality of product.

The Fourdrinier section of the No. 1 machine was completely rebuilt and the wire upon which the paper is formed now measures 140 feet in length and 246 inches in width. The wire of the old Fourdrinier section was 93 feet long.

A more efficient press section was designed by adding a new third suction press and rearranging and mounting in new support frames two suction presses and one smoothing press used previously.

The rebuilt machine now has a total of 105 dryers, ranging in size from 48 to 60 inches in diameter and operating under the steam pressures ranging from 60 to 125 pounds. Three calender dryers of 60-inch size and 125-pound pressure replaced three smaller, 60-inch dryers. Two of the old calender dryers were installed at the wet end of the dryer section, replacing a single 42-inch receiving dryer.

The rebuilding has added 24 feet to the overall length of No. 1, which now measures 397 feet from the headbox to the reel.



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Adjustments, without hazard to equipment or operators, are *positive*, providing correct speed until changed.

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ALLIS-CHALMERS

NOVEMBER NEWSPRINT REPORT

NEWSPRINT ASSOCIATION OF CANADA, MONTREAL

I. PRODUCTION AND SHIPMENTS in short tons: 2,000 pounds.		NOVEMBER 1950	NOVEMBER 1949	NOVEMBER Percent Change	YEAR TO DATE 1950	YEAR TO DATE 1949	YEAR TO DATE Percent Change
1. Canadian Production: including Newfoundland	month and year to date	456,743	436,766	+ 4.6	4,848,034	4,761,455	+ 1.8
	per working day	17,567	16,799	+ 4.6	17,155	16,849	+ 1.8
	Percent of capacity	103.2	101.2		100.8	101.3	
2. Canadian Shipments: including Newfoundland	to United States	422,803	391,514	+ 8.0	4,345,134	3,996,069	+ 8.7
	to Canadian Consumers	31,394	28,326	+10.8	328,149	305,163	+ 7.5
	to Other Marks	23,511	41,137	—42.9	188,575	428,448	—56.0
	total: all markets	477,708	460,977	+ 3.6	4,861,858	4,729,680	+ 2.8
3. U.S. Production:	month and year to date	86,080	72,130	+19.3	919,817	829,674	+10.9
4. U.S. Shipments:	to U.S. Consumers	81,727	70,541	+15.9	905,452	812,481	+11.4
	to Other Markets	1,464	1,876	—22.0	14,517	12,924	+12.3
	total: all markets	83,241	72,417	+14.9	919,969	825,405	+11.5
5. U.S. Imports from Europe:	*estimate; see Table 8	*14,800	12,868	+15.0	*154,158	242,656	—36.5

II. CONSUMPTION AND STOCKS in short tons: 2,000 pounds.		NOVEMBER 1950	NOVEMBER 1949	NOVEMBER Percent Change	YEAR TO DATE 1950	YEAR TO DATE 1949	YEAR TO DATE Percent Change
6. U.S. Consumption	estimated total	529,796	491,722	+ 7.7	5,381,103	5,043,444	+ 6.7
7. North American Stocks:	U. S. Consumers	632,446	625,119	+ 1.2	632,446	625,119	+ 1.2
	Canadian Mills	107,366	140,970	—23.8	107,366	140,970	—23.8
	U. S. Mills	10,662	13,215	—19.3	10,662	13,215	—19.3
	estimated total	750,474	779,304	— 3.7	750,474	779,304	— 3.7
8. A.N.P.A. Report, 525 Newspapers	Consumption	407,943	378,626	+ 7.7	4,143,451	3,884,992	+ 6.7
	Stocks (tons)	433,282	466,255	— 7.1	433,282	466,255	— 7.1
	Stocks (days)	32	37		32	37	

HW APPOINTS TWO

WATERVILLE, Me. — The Hollingsworth and Whitney Co. has announced two additions to the supervisory staff of their Waterville mills.

Oliver J. Agnew has been appointed assistant superintendent of the paper mill to fill the vacancy created by the promotion of Thomas Henderson to production planner.

Carl A. Anderson has been appointed assistant chemist.

ELECTED ST. REGIS DIRECTOR

NEW YORK — Directors of St. Regis Paper Co. at a meeting on December 13 elected James P. Lewis, Beaver Falls, N. Y., to the board to fill a vacancy created by the death of his father, Harry S. Lewis, last October.

Since his graduation from Williams College, Mr. Lewis has been closely associated with the important business interests of his late father in Northern New York. These include the J. P. Lewis Company of Beaver Falls, manufacturers of wood fiber and paper board; Latex Fiber Industries, Inc.; The Beaver River Power Company; Smith-Lee Company, Oneida, N. Y.; and the Payne-Jones Company, Lowville, N. Y.

ELECT UNION OFFICERS

Ray Bradford of Longview, Wash., was re-elected president of the Washington State Joint Council of Pulp and Paper Mill Workers at a conference held in Port Angeles, Wash., on December 1. Other officers re-elected were Richard Anderson, Port Angeles, vice-president, and Jack Dawson, Hoquiam, Wash., secretary-treasurer.

ARMCO CONGRATULATES GARDNER

Edward T. Gardner, president-general manager of Gardner Board and Carton Co. (right) receives anniversary congratulations from Charles R. Hook, board chairman of Armco Steel Corp. when the Gardner firm celebrated its 50th anniversary celebration with a banquet attended by more than 600 people at the Manchester Hotel, Middletown, Ohio, December 4. Hook announced his company would present the Gardner Company with a mural, etched on stainless steel, as a tribute for being "a good neighbor in the community and industrial affairs."

RETIRES FROM POWELL RIVER

VANCOUVER, B. C. — D. A. Evans, vice-president in charge of industrial and personnel relations for the Powell River Company, Ltd., has retired from active service with the company. He will continue as a director and consultant on policy matters.

Mr. Evans joined the Powell River Company in 1936, when he was appointed resident manager.

Letters to the Editor

Dear Mr. Perry:

I just cannot refrain from commenting favorably on the November 30, 1950, issue of *Paper Trade Journal*. When my copy reached the desk yesterday afternoon, I spent some little time with it; but, knowing that it needed more time than I could give it then, I laid it aside and picked it up again this morning.

Both the University of Maine and *Paper Trade Journal* are to be complimented on making this information available to the industry as a whole rather than confining it only to students at the University of Maine.

I am sure that you and the other members of your staff will be having numerous compliments on the job.

Harry E. Weston
Secretary and Treasurer
American Pulp & Paper
Mill Supts. Assn.
Chicago, Ill.

Dear Mr. Perry:

Early indications are that there will be a considerable demand for reprints of the entire series of lectures. Do you plan to publish these lectures as a separate? It would seem that such a publication would be very valuable.

Brown Company
Berlin, New Hampshire

Dear Mr. Perry:

P.T.J. is entitled to an orchid and an "Oscar" for publishing the University of Maine Lectures.

This appears to me to be the most valuable single contribution ever to have appeared in a paper industry journal. Can copies in board binding be secured?

Again congratulating your organization on the Univ. of Maine issue,

Wm. B. Wheelwright
Cambridge, Mass.

HOWARD WRIGHT JOINS S. AUSTIN BICKING

MIQUON, Pa. — As of December 26, J. Howard Wright will assume the position of chief chemist with S. Austion Bicking Paper Manufacturing Co., Downingtown, Pa. Prior to this connection, Mr. Wright was chemical engineer at W. C. Hamilton & Sons, Miquon; assistant plant engineer with St. John Sulphite Ltd., Fairville, N. B.; assistant technical director and stock preparation supervisor with Sitroux Inc., Utica, N. Y.; research and development engineer, Pulp and Paper Division, Diamond Match Co.

paper sculpture by gerstein-epps

"let 'er roll"

Whether they "roll" in tank cars,
or any other type of container, Niagara chemicals
are unsurpassed for quality.

EBG* Liquid Chlorine
NIALK* Caustic Potash
NIALK Carbonate of Potash
NIALK Paradichlorobenzene
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NIALK TRICHLORethylene
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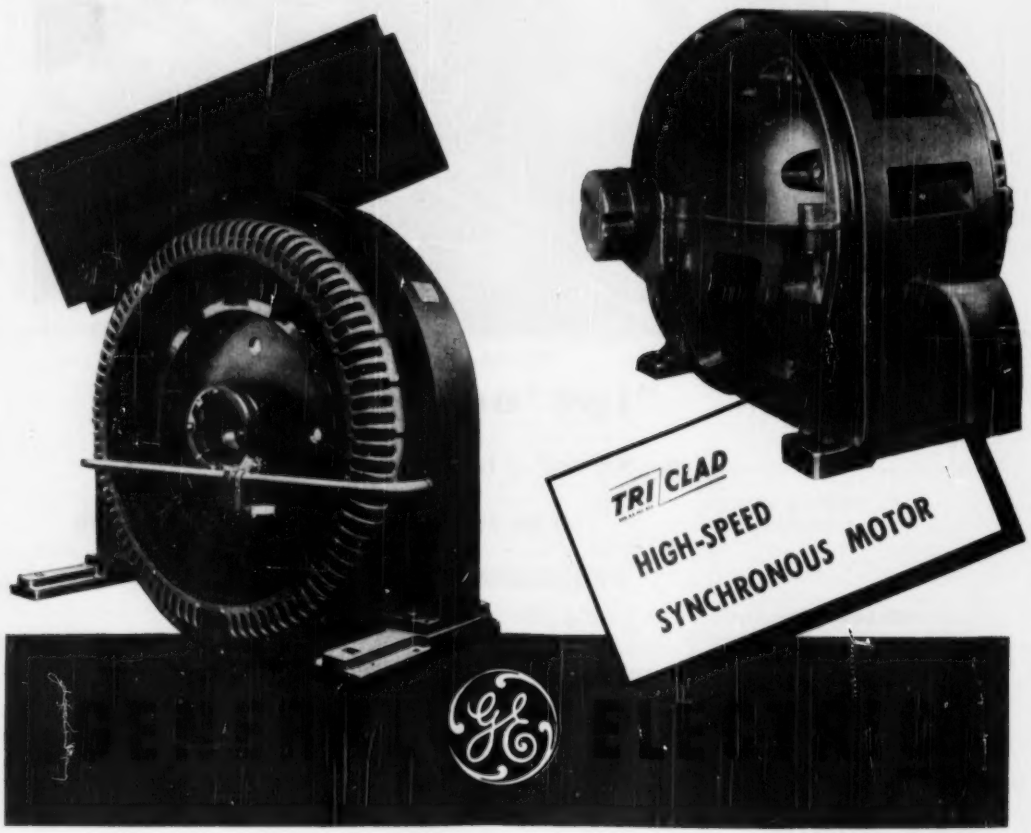
SAVE MONEY

SAVE ON OPERATING COSTS . . . Municipal plant gets higher efficiency by continuous operation at constant speed of three 500 horsepower, 1.0 power factor, G-E synchronous motors, each coupled to a centrifugal storm-sewer pump.

SAVE ON INITIAL COST . . . Paper mill selected this 4000 hp, 200 rpm, G-E synchronous motor for driving the montague grinders at low speed. Maximum operating efficiency thus resulted.



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IT'S ON THE RECORD . . .

Lower operating costs higher operating efficiency

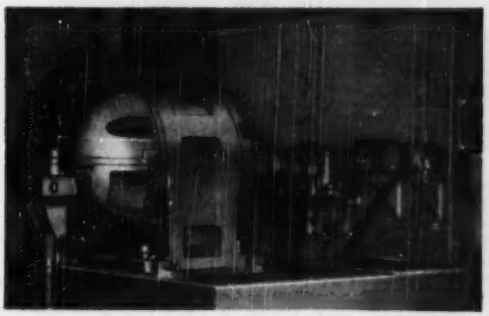
Lower initial cost including control and exciter—for many ratings

Reduced demand and release of needed generating capacity

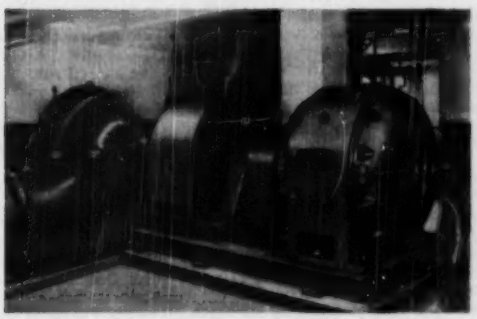
Reduced power rates for improved power factor

For your next large, constant-speed motor, ask your General Electric sales representative to tell you how you can take full advantage of the money-saving features of G-E SYNCHRONOUS MOTORS. Or write for bulletins GEA-5332 (low-speed) or GEA-5426 (high-speed) on your letterhead to *Section 770-22, Apparatus Department, General Electric Company, Schenectady 5, New York.*

GAIN EXTRA PERFORMANCE



DEPENDABILITY . . . Extra protection against physical damage, electrical breakdown, and operating wear and tear makes Tri-Clad® motors highly suitable for sawmill operations. Here is a Tri-Clad synchronous motor rated 300 hp, 1200 rpm, driving an edger in an Oregon sawmill.



LONG LIFE . . . All welded steel-plate stators assure a permanently solid core, and box-type construction means a rigid frame. This 350 hp, 0.8 p.f. G-E synchronous motor, coupled through magnetic clutch, is matched to a fan pump which delivers stock to paper machine.

SIMPLIFY OPERATING PROBLEMS

APPLICATION ENGINEERING . . . Engineers with many years of field experience will tailor synchronous motors to fit your needs. An example is this largest synchronous motor (in horsepower) ever to be applied to drive a reciprocating compressor; G-E motor rated 4500 hp, 300 rpm, driving a Clark gas compressor.

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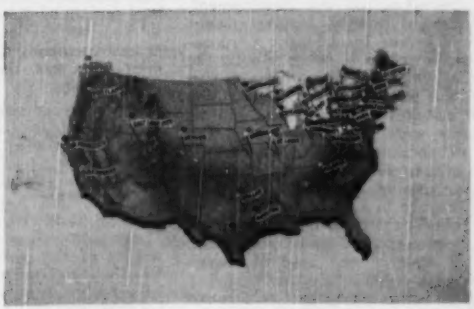


SERVICE . . . No matter where your plant is located, you will find General Electric service close at hand. Experienced engineers of our local offices, and trained staffs from our Service Shops are always at your command.

Corrosion—VIII of Series

Protective Coatings Prevent Pulp Mill Corrosion

R. H. MALOY[1]

Of all the rugged construction materials used by man, that which is most universally employed and accepted as the strongest is also the one which must be most carefully pampered. That one is steel, king of all metals, yet defenseless against moisture and air. To protect this Goliath from the sling of its David-like assailant $2,045,000,000 is spent each year in the United States alone for protective coatings. To this the country adds $1,460,000,000 more for the labor to apply and replace these coatings.

"Conservation of matter" is the technical term for the law of nature which causes steel to oxidize and presents the industries of the world with their greatest maintenance item. "All matter must return to its original state in nature," the law says; and industry—at great expense—is determined that it shall not do so. Nor is this expense evenly distributed according to amount of equipment, for in those industries employing acids, alkalis and salts, corrosion is greatly accelerated. Of these industries, paper pulp making stands in the forefront.

A most effective solution to this problem has been found to be a heavy barrier or coating which will be unaffected by these reagents and at the same time resistant to the ravages of time so that many years' of service without replacement can be realized.

A discussion of the development, qualities and uses of coatings manufactured by the Insul-Mastic Corporation of America will serve to point the ways in which protective coatings can serve the paper and pulp mills. The corrosion preventive products of this company were developed around the idea of endurance and resistance. It was known several years ago that existing coatings were not performing satisfactorily in industry due to failures to meet the tests of time, weather and chemicals. Insul-Mastic, therefore, decided upon a new type of mastic coating to be compounded around a material which would not be effected by chemical attack. Such a material was found in the form of Gilsonite, a pure bitumen from the Uinta Basin, Utah.

[1] Advertising Manager, Insul-Mastic Corp. of America, Pittsburgh, Pa.

This shiny black mineral is a hydrocarbon so thoroughly saturated that it is almost completely inert and resists any reaction with acids, alkalis and the elements which would cause it to be displaced. Gilsonite, Insul-Mastic decided, was the coating base that it needed to do the job that industry wanted. Furthermore, Gilsonite does not contain soft, waxy paraffins and, therefore, would be more resistant to physical wear.

Still further advantages were seen in Gilsonite. Properly plasticized, it gave the coating a temperature range of —40°F. to +300°F. Between these great extremes, it was found that the coating would neither crack due to cold nor run nor slip because of great heat.

Insul-Mastic was well on the way to its goal, but there were other ingredients to be added to the coating before it would take its place on evaporators, digesters, tanks and structural steel of the pulp mills. For one thing, it was known that the life of the coating could be increased beyond even Gilsonite's durability by the addition of proper fillers. It was also known that the best filler obtainable was flake mica. This had been determined in tests made by Dr. O. G. Strieter of the National Bureau of Standards on 57 different coating and filler mixtures. In these tests the coatings containing flake mica lasted twice as long as the coatings having the nearest competing filler. The best flake mica filler was, therefore, chosen by Insul-Mastic.

For spraying smoothness and additional durability, asbestos fiber and ceramic clay were also added to the new product. Insul-Mastic soon had the coating it desired for preventing corrosion, and tests made by sandblasting, acid dipping, Weather-O-Meter and other means proved the quality of the material. In fact, the Weather-O-Meter test indicated a life expectancy of at least 50 years for Insul-Mastic.

Industry was slow to accept a coating which, in appearance, resembled those which had not served well in the past. However, certain large industries, sensing something different, began to make tests of the new material. These were rigid tests of long endurance, but soon the skepticism began to fade, and Insul-Mastic found itself in the specifications of many of these concerns. These same coating specifications were also made more exacting than they previously had been, due to the quality of the newly introduced coating.

Introduced To Pulp Mills

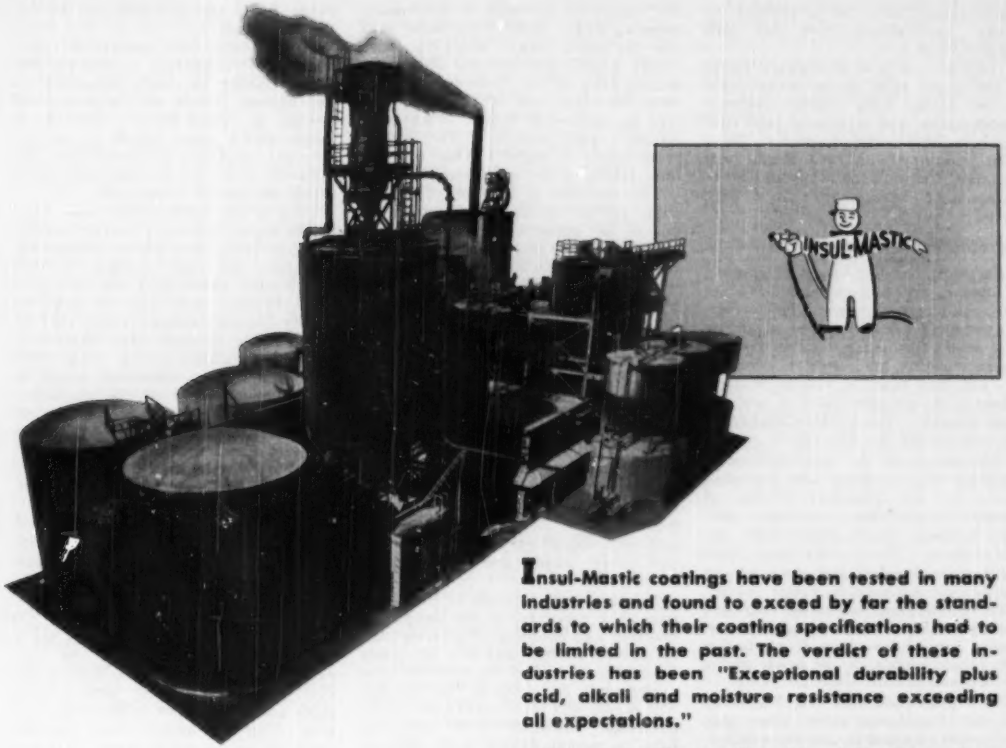
With a coating so thoroughly planned to prevent corrosion, it was natural that Insul-Mastic should have found its way into the paper pulp mills, where the severest corrosion problems existed. Having discussed its development, we follow now with the means by which the coating prevents this corrosion.

In the sulphate process mills particularly, the humid, salt laden air acts to speed oxidation of structural steel and other steel surfaces, such as storage tanks and water towers. These structures are subject to an unusually rapid rate of corrosion due to the salt which escapes into the atmosphere. They must be protected.

This is quite easily accomplished by preparation of the surface to remove rust; priming if necessary; and then spraying with the protective coating. The spray method of application assures an even coating regardless of pits caused by rust. It also eliminates any "scalping" of the high spots, as would be caused by a brush.

Salt, however, is not the sole cause of corrosion in the paper and pulp mills. Wherever acids and alkalis exist there is the potential of accelerated corrosion — even though every precaution may be made to divert fumes, vapors and liquids. Therefore, a coating specifically engineered to resist these destructive agents is the logical choice to protect vessels, pipes, ducts, structural members and other metal equipment that is near the digestors, blow tanks, liquor tanks, and wherever the danger of spills and escaping vapors or the like exists.

A test of the effectiveness of a coating under such conditions is to have the manufacturer coat a small steel panel and suspend it in your most cor-



BEHIND THIS COATING APPLICATION STANDS THE

DEPENDABLE NAME OF

INSUL-MASTIC

Insul-Mastic coatings have been tested in many industries and found to exceed by far the standards to which their coating specifications had to be limited in the past. The verdict of these industries has been "Exceptional durability plus acid, alkali and moisture resistance exceeding all expectations."

The outstanding quality of Insul-Mastic coatings is due to a completely different type formula. This includes the use of large percentages of such quality ingredients as Gilsonite and mica. Many imitators employ only token amounts of these materials—just enough to mention them.

Insul-Mastic coatings have four basic uses:

- **VAPOR-SEALING**—Keeps thermal insulation dry. Prevents corroding of vessel beneath.
- **PREVENTING CORROSION**—Coated steel, submerged in acid solutions has not been harmed.
- **INSULATION**—Cork filled Insul-Mastic will reduce heat flow through metal plates 65%.
- **WATERPROOFING**—Accelerated weather tests have set waterproofing life on building walls at 50 years.

End your coating problems and reduce maintenance costs. *Think first of the coating that lasts.* Write to Insul-Mastic Department 1 at the address below and see our insert in Sweet's Catalog.

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rosive atmosphere for a number of weeks. Insul-Mastic does this with regular success.

A further cause of corrosion is found in the paper mills where steam used in the drying rolls causes continual condensation upon structural steel roof members above the machines. Here again, spraying with Insul-Mastic will eliminate continual painting and make maintenance unnecessary for a long period of years.

Corrosion From Weather

The most familiar causes of rusting, of course, are rain and condensation upon equipment exposed to the weather. No comment need be raised regarding the need for a protective coating where moisture upon steel is concerned. The steel must be weatherproofed. There is no question about it, and the most durable, impenetrable coating is the one needed for the job.

The extent of the weatherproofing faculties of a coating can be determined by the National Bureau of Standards accelerated weather test, the moisture vapor penetration test and others. These tests have been made upon Insul-Mastic materials by independent laboratories under government commission, and their combined findings reveal a moisture vapor penetration rate of less than .01 grams per 100 square inches per 24 hours and a life expectancy of about 50 years.

Such protection and long life mean the end of continual maintenance upon equipment exposed to outside weather. Where painting was once necessary every few years, the proper protective coating will permit equipment to stand almost indefinitely without attention. Man's proper blending of nature's own gifts — Gilsonite, mica and asbestos — can thus halt nature's determination to reclaim the metals taken from her soil.

Vaporsealing

A further use for Insul-Mastic protective coatings is to prevent the entry of moisture vapor into thermal insulation. Moisture vapor will, under certain conditions, penetrate any porous material. It will drift through thermal insulation on evaporators, steam lines, storage tanks and other vessels, when the insulation temperature is lower than the ambient temperature, and will condense into moisture. This moisture becomes trapped in the insulation, causing corrosion which is undetectable since the vessel is covered.

This principle of moisture vapor penetration and its condensation applies to nearly all types of insulated vessels, regardless of operating temperature. This is so because all vessels are subject to shut-downs from time to time, and on such occasions, condensation will probably occur if the insulation is not sealed against the entrance of moisture vapor or humid air.

Where pipes and vessels are operated below a temperature of 212°F., the danger of corrosion is continually present, since vapor condensate will not be boiled away. Even in cases where vessels are operated above the boiling point of water, the temperature near the outer side of the insulation will be somewhat cooler. Therefore, moisture may remain if the outside temperature is higher. This will reduce efficiency of the insulation.

The problem of keeping moisture vapor out of thermal insulation is not one to be attempted without careful investigation. There are few materials that will stop this force. Even rubber, which is so universally employed as a waterproofing material, will not halt it. Selection of the proper barrier should be based upon careful testing by a reliable laboratory.

As has been pointed out, such a test was made on Insul-Mastic materials by a laboratory doing research for the government. The penetration rate of 0.1 grams per 100 square inches per 24 hours as determined by this test was considered close enough to perfect impermeability that the government selected Insul-Mastic to keep moisture vapor out of the bombers that were coated and stored after World War II.

Further cause for care in the selection of a vaporseal is the danger of cracking and checking. Materials high in solvent content and low on solids have little left when the solvents have evaporated. As a result the material will shrink and leave cracks and "alligatoring." Material which dries too hard to permit flexing with the expansion and contraction of the vessel beneath is also likely to crack. These statements are based upon known cases in the paper and other industries where insulation became water-soaked due to moisture vapor penetration or cracks in the protective coating. The dampness caused corrosion which remained undetected beneath the insulation until the tanks were deeply pitted. One such case in a Texas butadiene plant resulted in the stripping of all insulation from thirty-six large fractionation columns, reinsulating them and vaporsealing with Insul-Mastic.

An almost identical case has occurred in a large Baton Rouge refinery where Insul-Mastic has been constantly vaporsealing vessels a second time—at a second expense to the refinery—because another coating failed to keep out moisture the first time.

Sprayed Reinforced Membraning

Where the insulation to be vaporsealed is soft or semi-rigid, it is not advisable to spray a protective coating directly over this, since the soft base may lead to puncturing of the vaporseal material. This could also be true for the custom of applying cement over soft insulation. The base may not always be rigid enough to support this brittle substance. Furthermore, water from the cement will be absorbed by the insulation and sealed therein. Insulation efficiency will be reduced and the possibility of corrosion increased.

Perhaps the best method of preparing soft insulation to receive the mastic coating has been introduced to the market within the past several months by Insul-Mastic. This is a tough plastic sheet which is sprayed over the insulation in liquid form and dries to a strong, flexible base over which the mastic is sprayed.

This is the method that was used by the armed forces to package bombers, guns and other pieces of fighting equipment for long storage. In this well known undertaking the plastic, a vinyl, bridged open gaps as large as twenty inches without impairing its strength. It is easily seen, therefore, that an application of this vinyl over insulation will be sufficiently tough to prevent puncturing of the vaporseal by anything but a very severe blow or sharp instrument.

Other advantages of using the vinyl as a base for the mastic are augmenting the vaporsealing functions of the mastic, and ease of spray applied application of the vinyl as compared with the application of cement. Also, the cement contains water, which can be absorbed by the insulation.

Two Functions With One Coating

We have recognized the need for a coating which will prevent the corroding of metal. We also realize the necessity for insulating tanks, ducts, pipes and other types of chemical vessels. This constitutes two separate steps at two separate costs. Yet we have seen that they are necessary steps since it is good maintenance policy to vaporseal wherever insulation is used. However, for work within temperature ranges up to 300°F., these two steps may be combined into one. This is accomplished by using an Insul-Mastic coating known as "Type D."

This consists of the original Insul-Mastic coating which was carefully developed to prevent corrosion, and to it is added a large amount of granulated cork. Cork is an excellent insulating material. The combination of these two results in a coating which will stop 65 percent of heat flow through metal, and has a "K" factor of .36. This coating is usually applied ¼" to ⅜" thick.

This is an insulation that is water repelling. Therefore, it needs no vaporsealing.

This is an insulation which can be spray applied to any angle of surface without banding or other means of support.

This is an insulation which also prevents corrosion.

Advantageous use of such a coating can be made, for example, on liquor storage tanks. Since it is desirable to keep these tanks heated, a substantial fuel savings can be affected by retarding loss of this heat. This is true for both soda and sulphate pulp mills.

Other uses of Insul-Mastic Type

"D" are on the digestor piping, blow tanks and hot water tanks in sulphate mills; and on digestors in sulphite pulp mills to reduce the temperature in the digestor buildings, and make them more comfortable as far as working conditions are concerned.

Controlling Condensation

Insulating cold water pipes and preventing condensation from forming on them is a problem which applies to all types of pulp and paper mills. Whether the pulping process be alkaline, sulphite or ground wood, there are cold water pipes which cause humidity to condense out of the air and to form moisture upon the pipes. In boiler rooms and water treatment plants the same thing is true. The direct result of this is corrosion.

The condensation of humidity involved here is the same work of nature that makes proper vaporsealing of heated tanks necessary. On cold water lines, however, the condensation of moisture vapor is taking place almost constantly. Vapor laden air must be kept away from cold pipes or rust will begin its destructive work. It is not necessary, though, to use heavy insulation plus a vaporseal because the temperature does not drop below the effective range of Insul-Mastic Type "D." This range extends as low as —40°F. Therefore, a single coat of Insul-Mastic Type "D" on cold water pipes will, in almost every case, prevent condensation as well as corrosion.

Buildings

Within the paper industry, as we all know, there occur some of the worst corrosive conditions known to any industry. There also are some which do not arise from peculiarities of the trade. Among these are roof and building deterioration. Leaking roofs, loose mortar and spalling masonry allow moisture to enter buildings and to speed the rusting of building structures. Here again protective coatings can serve the paper industry. Roofs and walls can be sealed against the entrance of moisture and the building life greatly increased.

Furthermore, the coating can be made to match uncoated brick or stone by blowing colored slate granules into the mastic while it is still wet. These granules are supplied in various colors and can then be blended together in pleasing combinations. The result is an attractive finish, but the coating which underlies it holds the real attraction from the maintenance engineers' point of view.

The sealed wall needs no further attention and will continue to hold out destructive moisture for a great many years. Such an application was made to the Pennsylvania Railroad's Harborside Terminal in Jersey City and to many other well known buildings by the Insul-Mastic Corporation of America.

In Detroit, the glaze had worn from the old tile roof of an automobile manufacturer's building and the roof was leaking. At a fraction of the cost of a new roof, and without interfering with production, an Insul-Mastic protective coating and red granules were sprayed over the tile. The corrosion producing condition was stopped, and the building received an extended roof life which will be equal to that of a new roof. It is safe to say this, for the Insul-Mastic application was, in effect, a new roof.

Such applications, it is true, halt corrosive conditions which are, by far, secondary to the main causes of corrosion in the pulp and paper industry. Nevertheless, they serve to point out that this destructive force of nature can be stopped under almost all conditions by the careful selection of a high quality protective coating.

By high quality is meant resistance to great extremes of weather and temperature and the catalytic agents which speed the work of nature. As has been pointed out, a range of —40° to +300°F. can be obtained in protective coatings.

The words, "High Quality," are not mere adjectives for use in advertisements. They should also imply that the coating is not likely to react with acids, alkalis and other chemicals and disintegrate. This can be assured by the employment of a large percentage of practically inert Gilsonite.

"High Quality" also implies an exceptionally long life. If a purchaser bears in mind that the U. S. Bureau of Standards has determined mica flake to be by far the most effective filler contributing to longevity, he can assure himself of long service.

"High Quality" should also include the implication that the coating is easy to spray; has no harmful effect upon spraymen, such as toxic fumes or burning of the eyes; and does not have an odor after drying.

Pulp and paper mill superintendents and their engineers who seek to curb the progress of rust and corrosion in their mills will find that the protective coating fulfilling the foregoing standards will aid immeasurably in solving their problem.

We have tried to point out in this article the many places and conditions in paper and pulp mills where proper coatings can prevent corrosion, and in some cases also insulate vessels and retard condensation. However, what has been said is general in nature. Specific problems require specific applications and should be discussed with an engineer of the supplier. Such a conference will give assurance that the right protective coating can solve corrosion problems, even those that are known to be among the worst in industry.

How Much Does It Hurt in Dollars?

Henry J. Perry[1]

The problem of the high cost N. Y. S. Workmen's Compensation in the logging, lumbering and pulpwood industries has been the subject of great concern and discussion, within industry and various forestry and legislative committees.

These discussions brought out interesting information on inequalities in classification, rates in competing states and the belief that Quebec had a superior low cost system. It was also apparent that little concrete information was available on which to base these conclusions.

Many states have used the New York Law as a model, however, many changes have been worked in to satisfy various groups. Although most states make insurance compulsory, some states make insurance elective with employer, while others allow the employe to waive his rights under certain conditions. Variations in living standards, allow different amounts of workmen's compensation settlement between states.

With the information collected over the past nine months, which is meager at best, no common denominator has been found for comparison. However, evaluations can be made which bring the whole problem into better focus and point to the need for more complete information and study, by insurance men, safety engineers, management and labor, as well as the law agencies and legislatures.

Workmen's Compensation premiums and incurred losses which constitute part of the workmen's compensation premium are a cost factor and have an effect on competition in interstate commerce.

A series of comparisons has been made on the basis of the information available. The states chosen represent the fair cross section of the principal papermaking states.

Logging-Lumbering

It should be noted that several of the large papermaking southern states have a special pulpwood insurance premium rate whereby this type of op-

[1] Editor, PAPER TRADE JOURNAL, New York.

Table I

Summary of Payrolls, Rates, Premiums and Losses
Code 2702—Logging or Lumbering Industry

State	Earned Payroll	Current* Manual Rates	Ratio Loss/Pay %	Earned Premium	Ratio Loss/Prc. %	Incurred Losses: No. of Cases	Incurred Losses: Amount	Average Loss Per Case
Alabama	$4,879,786	$2.54	2.0	$141,380	68	854	$96,627	$112
Arkansas	6,691,418	7.46	3.8	478,310	52	2,036	250,152	106
Florida	3,612,562	4.03	2.6	139,679	67	691	93,515	134
Georgia	2,667,072	4.65	3.0	156,089	51	552	79,344	152
Maine	6,292,910	2.91	1.6	195,435	51	973	99,339	102
Michigan	7,656,269	14.99	7.1	996,477	54	1,493	536,840	360
Minnesota	5,431,377	5.28	4.0	322,032	66	1,105	212,381	192
New Hampshire	2,551,295	5.84	3.3	114,642	73	503	83,441	165
New York	7,590,375	15.73	8.8	1,033,164	64	2,022	661,165	327
Texas	7,852,903	9.89	6.0	650,413	72	1,789	466,001	260
Vermont	1,739,338	4.80	3.1	110,021	47	465	53,033	114
Wisconsin	2,802,481	13.75	8.5	305,580	68	784	239,721	305

Table IA

Code 2705—Logging or Lumbering—Special Pulpwood Rate (information available only in the following states)

Alabama	$48,836	$2.54	1.2	$1,481	39	7	$581	$83
Arkansas	1,832,644	7.60	2.5	135,246	34	454	46,606	102
Florida	81,968	4.32	11.6	4,176	239	18	9,420	502
Georgia	311,013	3.35	1.7	9,213	58	51	5,380	104
Texas	913,819	9.89	5.1	73,960	64	243	46,933	193

Earned Payroll—reported payroll upon which the premium is charged.
Ratio—Loss/Pay %—Incurred loss as a percentage of payroll.
Ratio—Loss/Premium—Incurred loss as a percentage of total premium paid.
* In effect Spring, 1950.

Table II

Summary of Payrolls, Rates, Premiums and Losses
Code 4206—Pulp Manufacturing—Groundwood Process

State	Earned Payroll	Current Manual Rates	Ratio Loss/Pay %	Earned Premium	Ratio Loss/Prc. %	Incurred Losses: No. of Cases	Incurred Losses: Amount	Average Loss Per Case
Alabama	$174,667	$1.00	0.17	$1,685	18	13	$308	$24
Arkansas	.....	1.77	no experience	.....	..	.....	.....	...
Florida	415,962	1.47	3.3	6,686	202	90	13,571	135
Georgia	889,539	1.29	0.66	12,600	47	169	5,960	35
Maine	1,858,889	1.23	0.46	24,980	66	170	8,317	48
Michigan	709,259	1.18	0.34	6,874	35	36	2,408	66
Minnesota	476,684	1.44	0.60	9,018	40	85	3,682	43
New Hampshire	96,789	1.86	4.50	1,915	230	28	4,399	163
New York	855,679	3.57	3.90	27,916	122	206	33,167	160
Texas	229,952	2.22	.....	5,281	17	22	875	44
Vermont	213,633	1.18	3.8	3,467	234	60	8,126	135
Wisconsin	453,328	2.03	.....	9,658	22	41	2,106	51

See Table I for definitions.

Table III

Summary of Payrolls, Rates, Premiums and Losses
Code 4207—Pulp Manufacturing—Chemical Process

State	Earned Payroll	Current Manual Rates	Ratio Loss/Pay %	Earned Premium	Ratio Loss/Prc. %	Incurred Losses: No. of Cases	Incurred Losses: Amount	Average Loss Per Case
Alabama	$2,093,775	$.94	0.2	$21,161	20	117	$4,134	$35
Arkansas	.....	1.93	no experience	.....	..	.....	.....	...
Florida	5,333,448	2.03	0.89	94,575	51	484	47,406	98
Georgia	3,525,562	1.35	0.48	46,493	37	260	17,075	65
Maine	5,559,232	.99	0.55	77,265	39	310	30,265	97
Michigan	2,516,992	.74	0.29	17,868	42	168	7,473	44
Minnesota	837,390	1.00	0.83	8,350	82	177	6,886	39
New Hampshire	1,073,377	1.39	0.78	21,397	19	255	8,336	33
New York	1,496,274	3.57	0.61	52,644	17	184	9,049	49
Texas	3,246,127	1.08	0.56	38,100	50	129	19,126	148
Vermont	.....	.78	no experience	.....	..	.....	.....	...
Wisconsin	4,442,287	1.10	0.36	66,174	24	323	16,068	50

See Table I for definitions.

Table IV
Summary of Payrolls, Rates, Premiums and Losses
Code 4329—Paper Manufacturing

State	Earned Payroll	Current Manual Rates	Ratio Loss/Pay %	Earned Premium	Ratio Loss/Prem. %	Incurred Losses No. of Cases	Incurred Losses Amount	Average Loss Per Case
Alabama	$1,987,393	$.91	0.67	$17,656	75	127	$13,270	$105
Arkansas	93,685	1.62	....	2,537	..	....	.....	...
Florida	3,023,701	1.75	0.76	50,593	46	139	23,307	165
Georgia	1,460,048	2.41	0.85	31,658	30	206	12,342	60
Maine	15,916,658	.99	0.63	231,554	44	780	101,676	130
Michigan	13,360,202	2.27	0.93	275,852	45	1,529	124,529	80
Minnesota	7,342,464	1.72	0.76	155,602	36	650	56,728	86
New Hampshire	3,488,821	2.56	1.5	85,021	59	601	50,529	84
New York	16,174,054	4.41	2.4	687,211	55	2,715	376,674	134
Texas	2,455,009	2.35	0.85	72,331	29	219	20,757	94
Vermont	808,989	1.90	0.94	14,722	52	202	7,631	38
Wisconsin	11,721,723	1.78	1.05	168,669	73	1,013	123,112	122

See Table I for definitions.

Note: Since the Workmen's Compensation Act went into effect in the State of Mississippi on January 1, 1949, we have as yet no experience for that state.

eration is separated from the overall lumber and logging operations rate.

Table I shows the payrolls, earned premium based on manual rates, loss ratios and average loss per case, number of cases and incurred loss for the regular logging and lumbering class (2702) and the special pulpwood class (2705).

Chart I illustrates the incurred loss per thousands of cords of pulpwood under the special pulpwood rate (2705) against the cost in states where logging and lumbering rate is used. In the case of Maine the total cut is known and includes both pulpwood and logs for lumber and other purposes. The New York State figure is based on estimated annual cut for all commercial purposes.

The reasons for this wide range of costs is not determinable for lack of adequate data on frequency and severity.

Woodpulp Manufacturing

Tables II and III cover the data developed on pulp manufacturing. The manufacturing occupations are relatively safe as compared to wood harvesting.

In several of the states there was a bad accident year and the loss ratio climbed appreciably which will probably increase future workmen's compensation insurance rates.

Table V
Premium & Loss Variation per Employee
Paper-Paperboard Classification

	1947 Employees	Premium	Premium per Employee	Loss	Loss per Employee
Alabama	2,239	$17,656	$7.90	$13,270	$5.75
Florida	1,965	50,393	28.20	23,307	11.85
Maine	9,421	231,554	24.50	101,676	10.75
Michigan	10,615	275,852	26.00	124,529	11.70
Minnesota	4,133	155,602	37.80	56,529	13.65
New York	15,276	687,211	45.00	376,674	24.70
Wisconsin	13,126	168,669	12.90	123,112	9.35

Table VI
Variation in Claim Frequency
Paper-Paperboard

	Total Employees	No. of Cases	No. Cases per 100 Empl.
Alabama	2,239	127	5.6
Florida	1,965	139	7.3
Maine	9,421	708	7.5
Michigan	10,615	1,529	14.4
Minnesota	4,133	650	15.8
New York	15,276	2,715	18.1
Wisconsin	13,126	1,013	7.7

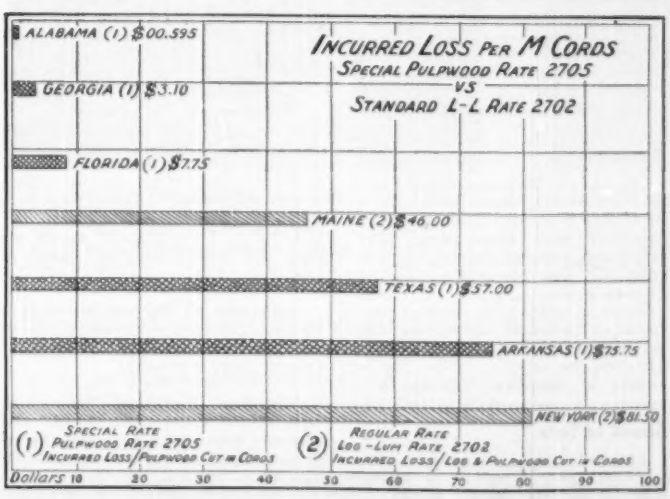

Figure 1

Paper & Paperboard

Table IV shows the primary data on the largest workmen's compensation class in our field (4329). This table illustrates loss ratio, loss to payroll ratio, and the average incurred loss per case.

In working out comparisons between the states, it is possible to develop the premium paid per employe as well as the incurred accident loss cost on the same basis. The latest employe census is for 1947 and during the succeeding years this figure has changed little. *Table V* illustrates the variations between states.

In an endeavor to find if some states have a greater claim frequency than others, *Table VI* shows New York, Minnesota, and Michigan as having a high claim rate per 100 employes, compared to the other states. Why this is so, stems from several factors which vary from state to state and are hard to separate such as size of mills, compulsory insurance requirements, schedule of insurance benefits and liberality of referees and judges. Until such time as proper records are kept, these factors cannot be weighed for effect.

Certainly compensation insurance is a competitive factor and an influence on plant location, regardless of the success of employers in preventing ac-

Table VII
Variations per Ton

	1947 Production (Tons)	Average * Price Per Ton	Premium	Latest Year Per Ton	Latest Year Loss	Loss Per Ton
Alabama	373,512	$114	$17,656	$.0475	$13,270	$.0354
Maine	1,255,582	133	231,554	.184	101,676	.0805
Michigan	1,536,490	141	275,856	.179	124,529	.081
Minnesota	635,794	...	155,602	.244	56,728	.085
New Hampshire	223,713	208	85,021	.380	50,529	.226
New York	1,849,873	155	687,211	.370	376,674	.220
Vermont	192,519	187	14,722	.144	7,631	.0745
Wisconsin	1,392,000	171	168,669	.120	123,112	.089

* U. S. Census F. O. B. mill price.

Table VIII
Estimated Loss in Wages Based on Cases* Closed New York State

Year	Average † Weekly Wage	Average Weekly Award	Total Awards	Estimated Potential Wages	Non-Compensatable Loss
Logging & Lumbering					
1947	$55.15	$15.30	$374,000	$1,350,000	$976,000
1948	60.26	16.40	383,000	1,410,000	1,027,000
1949	61.31	16.20	493,000	1,440,000	947,000
Pulp, Paper, Paperboard					
1947	54.10	17.40	679,000	2,100,000	1,421,000
1948	59.88	20.00	626,000	1,880,000	1,254,000
1949	59.83	22.30	613,000	1,570,000	957,000

* Supplied by New York Workmen's Compensation Board.
† Average U. S. Weekly Wage B. L. S.

cidents and the employes in using safeguards. *Table VII* illustrates the cost per ton of premiums and losses. The cost may seem small compared to selling price of the product but for 50,000 tons of annual production the loss would average $11,000 per year calling for a premium of $18,500 for a mill in New York. Workmen's Compensation when compulsory must be considered a tax on payrolls. Any management, exceedingly sensitive to raw material and labor costs and to taxation, must also heed workmen's compensation premium costs.

The problem of premium costs and incurred losses under the various workmen's Compensation Acts warrants considerable more study.

The information available is not in proper form to allow analysis of the factors causing the wide variation in accident cost. There appears to be little relation between frequency and severity factors by states and the various premiums and losses because each state collects the statistics on a basis acceptable to itself, with little change of interstate comparison.

The figures show such wide variation that it is obvious that insurance premiums and the claims paid can be a factor in the selection of plant sites, and in times of high competition, when every penny counts, effect profits.

It is also apparent that in spite of the present emphasis on accident prevention, there is still room for improvement particularly in the field of wood harvesting.

The Workmen's Compensation system used in Quebec for pulp and paper companies administered by the Quebec Pulp & Paper Safety Association is worthy of study. The Quebec wood operations workmen's compensation rate was decreased from $7.00 in 1937 to $1.50 in 1948 and a rate of $1.00 foreseen. The Quebec mill operations rate has dropped from $1.25 to $0.75 in five year period to 1948 with a foreseeable rate of $0.50.

Compare this with the manual rates in New York State of $15.73 for logging which includes pulpwood harvesting and $4.41 for paper and paperboard manufacture.

It should be noted that Quebec government is monopolistic in the workmen's compensation insurance field. No private company is permitted to write this coverage.

It is a well known fact that compensation awards do not begin to pay the actual loss or the potential wages if the injury had not occurred. *Table VIII* illustrates the actual average weekly awards, U. S. average week earnings and the non-compensatable loss to the injured workman in New York State.

Conclusion

The Quebec Pulp and Paper Safety Association has shown what can be done. Let us do our work under free enterprise with management, labor, safety organizations, the insurance carriers and state participating each in its own sphere.

There is money to be made or saved for all in Safety, to say nothing about the savings in heartache and suffering. The time for action is now. The big answer to manpower shortage is to keep keep people working safely.

Source of Data

The insurance figures used in *Tables I, II, III* and *IV* and as a basis in other tables were kindly supplied by the National Council on Compensation Insurance. The data used on production, taxes and number of employes is taken from reports of the Census and APPA.

Acknowledgement

The assistance of Mr. Marconi, National Safety Council, Mr. Heubner, Flintkote Co., has been extremely helpful and greatly appreciated.

Author's Note

It should be noted that in New York several large concerns carry their own compensation insurance. Their rates and losses are well below the averages calculated.

The current manual rates are those in affect in early 1950.

AUSTRALIAN NOTES

Imports of newsprint in rolls during the month of August, 1950, totaled 11,172 tons compared with the previous month's 11,067 tons, and sheet imports totaled 153 tons (259 tons in July).

August imports of other printing papers were (figures in hundredweights of 112 pounds): Antique, 815 (Finland 693, U.K. 122); imitation art, 1,654 (U.K. 1,094, Sweden 560); machine pressed coated printing, 1,677 (U.K. 1,644, Sweden 33); other coated printings, 7,011 (U.K. 6,058, Sweden 544, Norway 409); monotype, 134 (U.K.); offset embossed, except m.g. litho, 352 (Sweden 272, U.K. 80); offset, except embossed, 1,026 (Sweden 765, Norway 199, U.K. 62); machine glazed litho, 2,026 (Sweden 996, U.K. 943, Norway 87); machine glazed, except m.g. litho, 1,920 (Norway 1,098, Sweden 744, U.K. 78); esparto, one side supercalendered, 262 (U.K.); one side supercalendered, except esparto, 3,737 (U.K. 3,022, U.S.A. 715); two side supercalendered containing 25 percent or less mechanical pulp, 16,944 (U.K. 16,248, Finland 491, Sweden 205); machine finished containing 25 percent or less mechanical pulp, 3,945 (Finland 3,791, Sweden 104, U.K. 50); other printings containing 25 percent or less mechanical pulp, 5,741 (U.K. 5,507, Norway 234); magazine and other printings containing more than 25 percent mechanical pulp, 16,738 (Norway 6,666, U.K. 6,261, Finland 1,699, Sweden 1,036, Czechoslovakia 981, Netherlands 95); and glazed imitation parchment, 481 (Sweden 378, U.K. 103). United States papers totaled 715 hundredweights valued at £3,617.

* * *

Application 137,997 has been lodged by the Lily-Tulip Cup Corp. for an Australian patent for a method of making paper containers.

* * *

Australian Newsprint Mills Ltd. reports total assets at £5,550,880. The company hopes to make a test run of its new paper-making machine shortly, but when this and the first machine will be in joint production cannot yet be stated.

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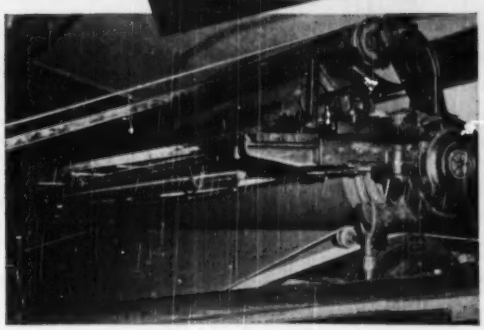

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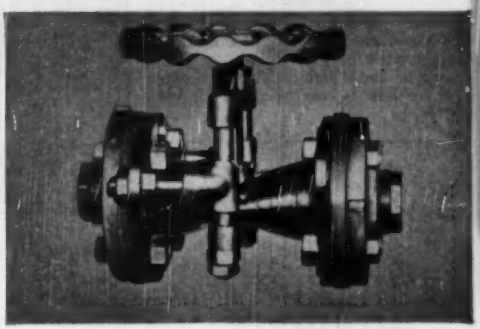

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Viscosity*

BY NEIL MAC COULL[1]

Introduction

At various times in the past, articles dealing with viscosity, its measurement and significance have been published in the Texas Co. publication, *Lubrication*. Inasmuch as this is probably the most important of all physical properties of a lubricant, this article has been prepared as a collection and amplification of information on this subject for reference as well as for current reading.

It is probably desirable to start this article with a few definitions: *Viscosity* in general is the manifestation of friction between the molecules of any fluid. As here defined, a *fluid* may be either a gas or a liquid. If the former, the molecules tend to repel each other and the gas will expand so as to completely fill any enclosing vessel. A *liquid*, on the other hand, will flow so as to adapt its shape to any containing vessel, but without appreciable change of volume by pressure. The rate at which either gas or liquid accommodates itself to a change in shape is influenced by its viscosity, or the friction between its molecules. All fluids, liquid and gaseous, have the common characteristic of yielding to any force no matter how small. The rate they yield, or flow is controlled by this viscosity.

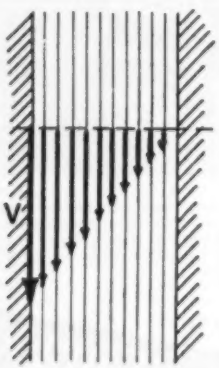
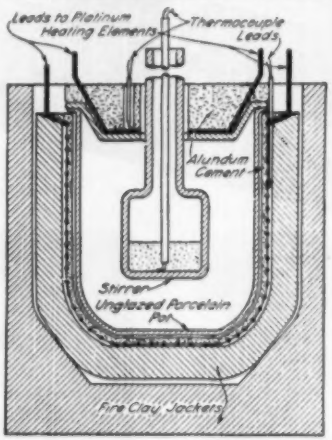


Figure 1—Schematic streamline flow of a fluid between two surfaces having relative velocity "V." Velocities of successive layers are proportional to distance from the fixed surface.

While viscosity is a property of all fluids, it is generally noticeable only when pronounced, such as in lubricants and in liquids referred to in the dictionary definition of this word as "thick, glutinous, sticky," etc. The word *viscosity* comes from the botanical word *viscum* for mistletoe, and refers to the viscous sticky fluid exuded by this plant.

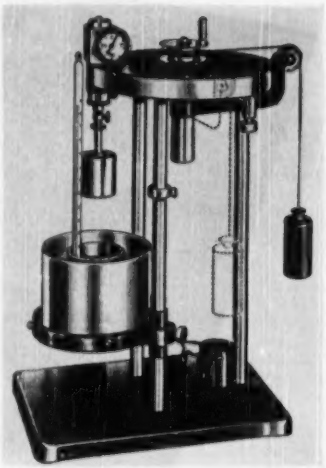
Viscosity impedes the flow of all fluids, and is therefore of interest to those concerned with the rate of flow of fluids in pipes, through orifices, in bearings, etc. The specific application of laws of viscous flow will become evident as this discussion expands.



Courtesy University of Illinois, Bulletin No. 140, Page 14, Engineer Experiment Station 1924.

Figure 2—Details of Viscometer for measuring of viscosity of molten glass.

Of the six parts into which this article is divided, the first illustrates the simplest concept of streamline flow between two surfaces having relative motion. A series of torsion viscometers is illustrated to show how viscosity acts and may be measured in this type of fluid flow. Part II covers streamline flow in capillary and other small tubes. This includes the efflux viscometers which are so commonly used in the petroleum industry. Part III covers turbulent flow as usually encountered in pipes, Part IV goes into some detail on the effects of temperature and pressure on viscosity, and Part V includes Viscosity Index. A very brief reference to the nature of plastic flow is given in Part VI.



Courtesy of Eimer and Amend

Figure 3—Stormer Viscometer, used to some extent for asphalts and similar liquids. The cylindrical element is rotated by the weight at the right. The cup containing the sample is shown lowered for cleaning. In use the cup is raised until the rotor is submerged. A water bath surrounding the cup aids in maintaining constant temperature. Readings are taken of the time required for 100 revolutions of the cylinder as indicated by the revolution counter above the cylinder.

PART I
Streamline Flow Between Surfaces Having Relative Motion

The classic illustration which is generally used to explain this property is that shown in Figure 1, which represents two plane surfaces having relative motion, and separated by a fluid which "wets" both.

The movement of the fluid during so-called "streamline" flow, when all particles move in parallel planes, pro

* Published with permission of the Texas Co.

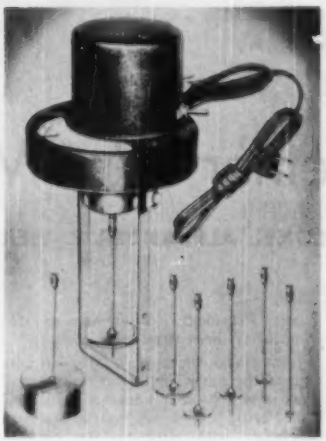
[1] Technical and Research Div., The Texas Co., Beacon, N. Y.

Courtesy of Eimer and Amend

Figure 4—MacMichael Viscometer. The cup containing the oil sample is rotated by a motor at constant speed, and readings are taken at the Torsional Deflection of a wire which supports a stationary cylinder immersed in the oil.

gresses uniformly between successive imaginary layers of the liquid, so that the "rate of shear"* is uniform between all layers. In this type of motion, the force required to overcome the internal friction of the fluid, when one of the planes is moved at a given velocity and at a known distance from the other, varies directly with the viscosity of the fluid, the rate of shear, and the area of the plane surfaces. Obviously, the magnitude of this force may be used as a measure of the viscosity when all dimensions are fixed. In this way, the fundamental unit of viscosity has been defined as the viscosity which requires one unit of force to move a surface of unit area at unit velocity when spaced one unit from a stationary plate, all dimensions being metric (C.G.S.). This unit of viscosity was named a Poise in honor of Dr. J. L. M. Poiseuille, who, as a physician, about one hundred years ago made an extraordinarily thorough study of the flow of liquids in very small glass capillaries[1] as an approach to a study of the flow of blood in human capillaries. It is an interesting sidelight that had Poiseuille used blood in his experiments, he would probably have failed in laying down these fundamental laws for the flow of fluids, since blood does not obey the laws of true fluids.

In practice the Poise is so large a unit that in most applications in the oil industry, the values for oils would be much smaller than unity. For this reason it is customary to use a unit one-hundredth as large, called a *centipoise*. Thus the viscosity of water which is 0.01 poises at 68.4°F., is 1.20 cp (centipoise). The centipoise scale may therefore be looked upon as expressing viscosities in terms of the viscosity of water at 68.4°F. An oil of 10 cp viscosity is therefore ten times as viscous as water at 68.4°F.



Courtesy of Brookfield Engineering Laboratories, Inc.

Figure 5—Brookfield Viscometer. Several types of rotor spindles including cylinders and disks, may be rotated in a beaker of oil by a Synchronous Motor. Several speeds are provided by a gear shift. A scale indicates the torque transmitted to the spindle as a measure of viscosity.

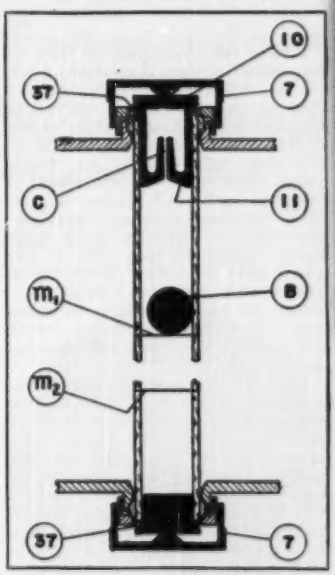
Torsion Viscometers

A practical application of the fundamental arrangement shown in *Figure 1*, of a surface moving parallel to another, is that of a cylinder rotating at the center of a cylindrical vessel containing a fluid. Newton[2] made a basic theoretical study of the effect of viscosity on the force required to rotate such a cylinder more than 200 years ago. He then showed that the force required was directly proportional to the viscosity and rate of shear (which increases directly with the rotational velocity). This is the basis of the class of instruments devised for measuring viscosity known as torsional viscometers. They have been used considerably in the chemical industry, an example being the measurement of the viscosity of molten glass,[3] and even of blast furnace slag at temperatures up to 3000°F.[4] *Figure 2* shows such a viscometer for molten glass, in which the viscosity is measured by the force required to rotate the cylindrical porcelain "stirrer". With proportionately smaller clearance space, this will be recognized as being similar to a concentric oil lubricated bearing, such as may be found on a vertical shaft. Equations are available[5] by which the viscosity of a fluid may be calculated from the dimensions of such an instrument and the rate of turning the cylinder, but it is more usual and simpler to calibrate with fluids of known viscosity. For instance, castor oil at room temperature was used to calibrate the viscometer previously referred to which was designed for blast furnace slag at very high temperatures. In this calibration the following type of equation is used:

$$(\text{viscosity}) = K \frac{(\text{Force causing rotation})}{\text{RPM}} \quad (1)$$

Calibration consists merely of determining the value of K in this equation for a given instrument with a fluid of known viscosity. In the interest of greater accuracy the constant K would normally be determined over a range of viscosities and temperatures, to assure that no extraneous variables are introduced in the range over which it is to be used.

Examples of the above instrument are the Stormer, shown in *Figure 3*,



Courtesy of Fish-Schurman Corp.

Figure 6—Hoppler Falling Ball Viscometer. A steel or glass ball is inserted in the glass tube shown, which is then filled with the fluid to be tested. The tube is assembled in a larger glass cylinder which acts as a constant temperature bath. The whole assembly is arranged to be inverted and the time measured for the ball to cross the two calibration lines m1 and m2. Selection of balls with various clearances and densities permits a range of viscosities from air to cylinder oil.

* See equation (3).

[1] "A Monograph of Viscometry", Guy Barr, p. 9; also: "Fluidity and Plasticity", E. C. Bingham, p. 330.

[2] "Viscosity of Liquids", Hatschek p. 1.

[3] U. of Ill. Bull. #140 Eng. Exp. Station (1924).

[4] Dept. of the Interior (Bureau of Mines) Tech. Paper 157.

[5] $\text{Torque} = \frac{5.35\ (\text{Shear rate})(\text{Viscosity}) \times \text{abh}}{10^5}$ (2)†

where: a = radius of rotating cylinder in cm
b = radius of stationary cup in cm
h = height of cylinder in cm
Viscosity is in centipoises,
Torque is in inch-pounds, and

$$\text{Shear rate} = \frac{2\pi\ \text{rps}\ (\text{Effective radius})}{\text{film thickness}} = \frac{4\pi\ \text{ab rps}}{(b^2 - a^2)} \quad (3)$$

where: $\text{Effective radius} = \frac{2ab}{b+a}$

†See: Barr, p. 222.

and the MacMichael shown in *Figure 4*, which are used occasionally in the petroleum industry for very viscous liquids. Another example shown in *Figure 5* is used in the paint industry, where viscosity is measured as torque required to rotate a cylinder or disk at fixed speed in a beaker of the test fluid. A somewhat similar torsional viscometer developed by The Texas Company is used for measuring the viscosity of mud suspensions used in oil well drilling operations.

Other examples of the dependence of viscosity on force-velocity relations between surfaces having relative motion and encompassing a fluid include the damping rate of a submerged pendulum and the rate of fall of a ball of known size and weight.[6] Similar laws cover the rate of fall of rain drops, and even fog particles. The rate of fall of a ball of known weight has been used as a means of measuring viscosities under special conditions, such as where very high pressures or temperatures exist.

Figure 6 shows the essential parts of a laboratory type instrument devised on this principle.

Typical torsional instruments generally combine both advantages and disadvantages, such as the relatively large volume of fluid required, and the fact that they may supply continuous readings of a stream of fluid during manufacturing processes. The large volume tends to minimize errors that might result from stratification of colloidal or non-homogenous mixtures of materials such as occur in molten glass, paint, etc. Where there is considerable space between the moving and stationary elements, small inaccuracies in the dimensions of either are generally not serious. In routine testing of liquid petroleum products, the volume required and the complication of moving mechanical parts are both undesirable, so that torsion viscometers are not customarily used in this service.

(To be continued next week)

[6] For a sphere falling in a viscous medium: Stokes Law:*

$$(\text{velocity}) = 21800 \frac{(\text{difference in densities})}{(\text{viscosity})} \times (\text{radius of sphere})^2 \quad ..(4)$$

This holds only for low Reynolds Numbers.
For a sphere falling through a fluid along the axis of a tube:†

$$(\text{viscosity}) = 21800 \frac{(\text{Radius of Sphere})^2 \times (\text{difference in densities})}{(\text{velocity in cm/sec}) \left(1 + 2.4 \frac{\text{sphere radius}}{\text{tube radius}}\right)\left(1 + 3.3 \frac{\text{sphere radius}}{\text{height of liquid}}\right)} \quad ..(5)$$

All dimensions above are in cm, time is in seconds, and viscosity is in cp.
*Hatschek: "Viscosity of Liquids", p. 34.
Barr: "A Monograph of Viscometry", Chapter VIII.
†From University of Illinois Bull. #140, p. 20.

Together We Work*

COLONEL ALEXANDER R. HERON[1]

I have two documents in front of me, neither of them is a speech. I will tell you in advance what they are and then put them away, so I will not be bothered by anything in front of me, in front of the light. I have no notes. We play this game in our Pacific Coast negotiations on the rules of "catch-as-catch-can," because in spite of all the flowery things John Burke said about the boys trusting me, trusting my intelligence, you would be surprised how often they would try to fool me with something I haven't seen before. So we have to keep our minds open and watch for whatever comes, and we have no prepared speeches then.

I will mention first the longest one, and then return it to the Brother who was kind enough to lend it to me. I will read just two short places: "The company and the union agree one with another, that they will abide by the articles of this agreement for the period of one year, from May 1, 1917, to May 1, 1918," and so forth. Then there are paragraphs after paragraphs after paragraphs of what they agree to abide by, down to a signature page, which is only one and a half pages from the beginning — the rest of it is detail — and the contract is signed, "Spanish River Pulp and Paper Mills, Ltd., by R. B. Wolfe, Manager; International Brotherhood of Pulp, Sulphite and Paper Mill Workers by John P. Burke, President." That was a little over thirty-three years ago.

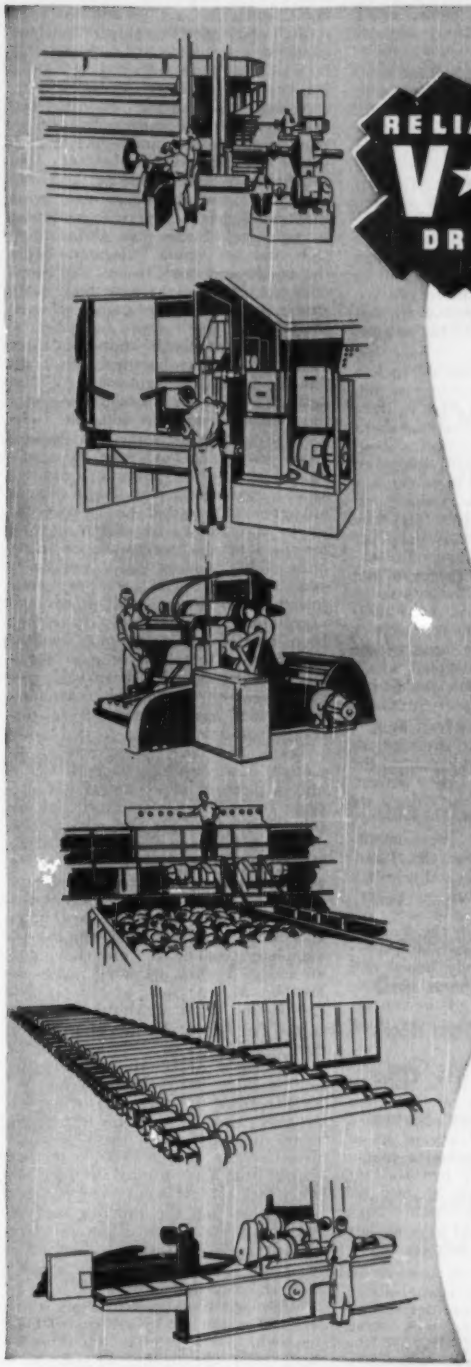
John Burke mentioned Bob Wolf as one of the early employer representatives whom he met and dealt with in this Pacific Coast set up. All of us remember with affection the earnest work and the wise counsel which Bob Wolf brought into our early sessions.

The other document that I have in front of me is a quotation of three or four short paragraphs from a very remarkable address, almost as remarkable as the one you are listening to today, remarkable in just the same respect that this was another occasion in which an outsider, or a brother from the other side of the table appeared, in a large group meeting. The group meeting was the annual convention of the American Paper and Pulp Association, and just in case you think that is another organization like the United Paper Workers, it isn't. It is not affiliated with the C.I.O. nor anything else. It is the organization of the companies engaged in the various branches of the pulp and paper industry, and the guest speaker on that occasion was a gentleman named John P. Burke. I am going to read you just a few of the things that he said. These were recorded. They were printed and he can not retract them, can not deny them. He may be able to change his mind—I have seen him do that. But on that occasion he said, "One of the very best things about the pulp and paper industry is that it furnishes employment to half a million workers. Another good thing about this industry is that it makes that great flood of merchandise that satisfies a social need, because this industry makes products that satisfy the needs of human beings, and because the needs of human beings for the products made by this industry are continually increasing, this is an expanding industry that requires the services of more and more workers. These workers are fortunate in working in an industry that furnishes employment that is steadier than in most industries. They are fortunate in working in an industry where the hours of labor are forty or less in the United States and forty-eight or less in Canada."

And a little later in his talk he said, "If I were asked what I consider the greatest change that has taken place in the pulp and paper industry during the time I have been president of this International Union, a period of thirty-three years, I would not cite the increases in wage rates, the shorter work week, improved working conditions, vacations and holidays with pay, group insurance, or old age retirement plans, all of which represent great milestones in the worward march of labor, but I would cite the changed attitude of the employers toward the unions as the greatest single change that has taken place in this industry in the past thirty-three years.

"I think that many union leaders fail to give sufficient consideration to the revolution that has taken place in the actual and economic thinking of

[1] Crown Zellerbach Corp., San Francisco, Calif.
* Presented at the 1950 Convention of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Portland, Ore.



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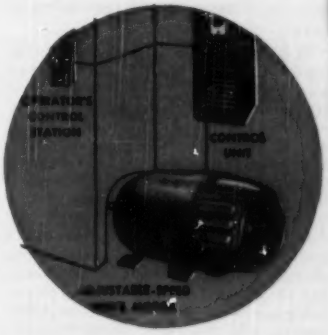

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the employers in this country. Trade union leaders should try to instill confidence in the trade union movement in the minds of the employers. If the employer still harbors in his mind thoughts of fear about the union, it is the task of the union leader to eliminate that fear by showing him that the union wants to work with him and his company, and not against him and his company."

Perhaps that would be a good place to close my talk today, but instead of closing and without notes and without a prepared speech, I am going to ask the patience of the delegates from the Pacific Coast States.

I will have to count on some of you for friendship and support here. I didn't know there were so many of the home town boys here. I am going to ask your patience while we live through some of the things that are old stories, some of the memories that I can't pass over too lightly in this first opportunity that has come to me to address your International Brotherhood in convention.

The thing that John Burke said about suspicion and viewing with alarm and sizing up in those first sessions in 1934 are strictly true. There is a little more to it than he knows about, though. How many of you were here in 1934? Not many of us left. In 1934 we were all a little bit clumsy at this kind of negotiating. It was new even to the representatives of the International Brotherhood; and negotiations of any kind were not only new, but nasty to the employer representatives who were here. In addition to the knowledge that inside their loose shoes, every union business agent, or walking delegate, had hooves instead of feet—we were also not too sure about the anatomy of some of the other employers. So we spent as little time as possible mixing with the union representatives who were there and we spent a great deal of our time watching each other. The employer caucuses were very interesting places in those days.

We wanted our negotiations to be conducted in an orderly and dignified way, and after a little bickering and argument, so we finally found a room that could be quickly filled with smoke, and in that room we gathered, as I remember, ten people, five representing the employers, and five representing the employees. We argued and discussed and negotiated and agreed and disagreed for about two or three hours and then, partly because we were afraid of what our own group would say to us, we recessed. The employer delegates went back to the employer caucus, and the union delegates went to theirs, and then we would meet again after a couple of hours. Now we would recommend this, and the union would say, "The boys turned that down flat. They will have no such thing." But we went on, and believe it or not, we finally reached an agreement, and all the delegates there signed the agreement and went home, and I would say, went home happy in most cases.

But came 1935, and we had the most outrageous request from the President of the International. "This is a wasteful way of doing it. When our delegates on the bargaining board sit down in the little smoke-filled room and reach certain conclusions in their own minds, and then they go back and tell the delegates, they don't believe them, they think they have been sold down the river and they don't trust them anymore. We want you to open it up and let all the delegates listen in. We won't have them interrupting us, but we want them to all hear the negotiations."

Well, nobody ever heard of such a silly thing as that. We could just picture what that would be like, to have an audience of seventy-five or a hundred dissatisfied union delegates, booing and hissing, especially when an employer representative tried to say something he thought was positive and necessary. We worked out a very fine scheme. We had five representatives from the employers and five representatives from the unions in the actual conference. Each side was allowed to send in as many observers. Five additional employer representatives watched the backs of the necks of the employers, and five additional union representatives sat in there and glared at the backs of the heads of the union representatives.

Well, there wasn't any disorder, so with a great deal of reluctance, the next year, in 1936, we finally surrendered. That is one of the things we could concede that didn't cost very much. Believe it or not, the Committee on Arrangements for the International Unions went out and rented a bankrupt nightclub with a gallery around the side, a dancing terrace. All the delegates sat down in the dancing terrace; everybody sat in and everybody listened, and nobody booed and hissed, and nobody interrupted the proceedings, and at the end of the conference, everybody knew why everything had been agreed upon.

This story on the Pacific Coast has been given a great deal of national publicity. A large part of it centers around this thing that is now called the "goldfish bowl." If any of us in 1936 dreamed we were making magazine and motion picture material for the whole United States because we all sat in one room and watched each other negotiate, we would have shaken our heads.

Going back to 1934, if those of us who sat down timidly and fearfully in that negotiation could have determined that the structure that was being started there would someday be the most publicized collective bargaining structure in the United States, I think we would have turned and run away.

Another thing that occurs to me is, that before we would negotiate, we employers, had a poll taken, a sort of non-Communist oath, up and down the room, and each employer delegate stood up and said, very solemnly that he was there with authority to commit his company, to sign an agreement; and each union delegate stood up, and said he was there with full power to reach an agreement and sign it for his local. We insisted that that was very important, because it was perfectly obvious that the employers who were there must have come with authority to sign, and if they had authority to sign and the union delegates didn't, the employers would be at a tremendous disadvantage because they could just be haggled and bargained all over the lot.

We lived through that for three years. I think it became a little bit difficult for the delegates to get that authority when the customers were not too well satisfied with what the delegates brought home with them the previous year. The next year we finally agreed that whatever was negotiated at the conference, would not become an agreement until it had been voted on by a majority of all the eligible members of the twenty-five or thirty mills. That was in 1937, and every year since that time, we have gone through this long, hard process of negotiating, and the results have then been carried home by one hundred delegates, to forty-five, or more locals and a referendum has been held; and every year the membership at home has ratified the agreement by a substantial majority.

We learned that an agreement, no matter how carefully negotiated, is only a piece of paper unless it represents the willing commitment of the thousands of people for whom these unions and these union officers speak. We learned along also that one of the greatest influences toward good relations, toward labor peace, toward prosperity and good earnings, is a union spokesman, a union leader who has the complete confidence of his constituency. I think we never made the mistake, at any place, at any time, in this Pacific Coast relationship, of hoping to see the local union president or the regional vice presidents, or the international representatives, undermined and repudiated by the membership. We have wanted to feel that when the delegates came down to the negotiating table, they were truly the representatives of the people who sent them there. We have wanted to feel that what they told us was in every respect the wishes and the thinking and the desires of the people whom they represented, because it is those people whom they represent who must be satisfied with the deal that is made.

Well, we have gotten along fairly well. You can see by the color of our hair which ones have gotten along the best, John Sherman, John Burke, or me with my white hair. It has been a hard life.

I suppose there is a group of about forty or fifty of us, classified as employers out here, who have spent more

time in union negotiations in the last fifteen years than any member in any of your locals has spent in union meetings.

Sometimes the boys tell me it is my fault that we have to spend so much time in negotiations, but there are two sides to that story, too. Most of you are probably familiar with the study that was made about two or three years ago by the National Planning Association trying to find out why this plan worked, they gave a great many reasons for it. They touched very lightly on one reason, which I want to emphasize today and pass on to you as representatives of the workers of the pulp and paper industry throughout the United States and Canada, something that we overlook very frequently.

There is no excuse in the pulp and paper industry for not having the soundest industrial relations in the world. We have a complete absence of the problems that make for mass misunderstanding, because we have a complete absence of mass employment in the usual sense of the word. One of the most discouraging experiences I have ever had was to stand in a gallery in a room in Detroit where forty thousand people worked in one building, and four hundred people were working in that one room. The four hundred people were all doing the same thing; and each man was doing the same thing minute after minute, and hour after hour, all day long.

I asked the President of that company what the supervision ratio was there. He said well, "It was one to three hundred. I said, "I mean the ratio of manual workers to each salaried supervisor."

He said, "So do I."

I said, "How can one man supervise the work of three hundred?"

He said, "He has nothing to do. Everybody knows their work. They are all doing the same thing and they all know how to do it."

I prayed God that I might never be catapulted into a situation where I would have to work in an industry that must work in that way. The contrast to that is so great, because in a typical pulp and paper manufacturing plant, no one can go in and find ten men together doing the same thing. Whether it is a seven-man paper machine or sulphite mill, or a kraft mill, man after man has a job that is his own. The process comes to him at a certain point. He does his job, and the material in the process goes on from him to someone else who must take it on beyond that point.

If any man fails in his part of the operation, there is trouble all the way down. Every man knows that what he is doing is a useful thing. He is trusted and he knows what the results of it are. Intelligent men, men who are willing to take that responsibility, are the kind who seek and keep employment in the pulp and paper industry. Now, I don't want anyone to go back and say no intelligent men seek jobs in the automobile industry. If I lived in Detroit, I would be working in the automobile industry, and I don't consider myself unintelligent. But the man who seeks and keeps a job in the pulp and paper manufacturing business, doesn't need to be a genius, nor a college professor. But he needs to have in him the human sense of responsibility and the human sense of importance, which is called for by the kinds of jobs that exist in the pulp and paper industry.

When free Americans and free Canadians are working on jobs that have a meaning, jobs that carry with them a responsibility, those men who are going to look after their rights in all directions. They are going to defend their rights against any abuse by anyone, and they are also going to be intelligent about the preservation of their rights. Perhaps the one most important characteristic I exemplified in our sixteen or seventeen years of experience here on the Pacific Coast, is the fact that we have come to understand jointly, in the same language, what is going on here, what we are doing.

Of course, we are making pulp, paper and converting the paper into products. Actually, what we are doing is: each of us is investing his time,

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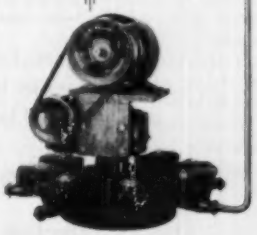

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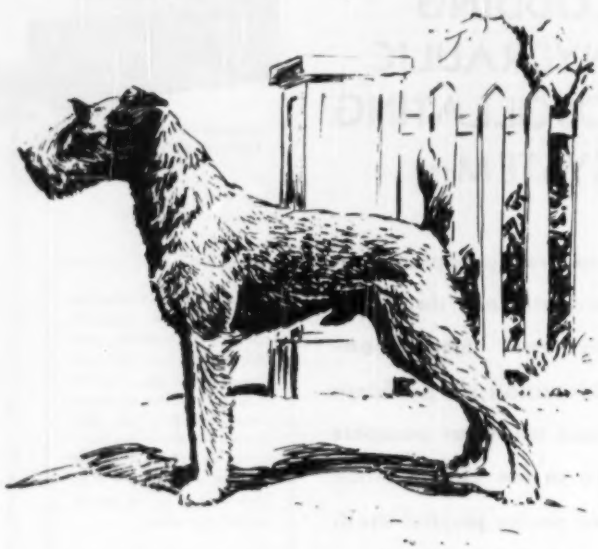
skills, strength, and service in an enterprise which changes our effects into a form that some customer some where is willing to buy.

Recently I have had to do some reading which became interesting to me when I found some very, very interesting side stories, of the things that happened about one hundred sixty years ago in this country which is now ours. We have taken it away from the Indians and away from the older generation. They don't give it up fast enough now, and we are getting ready to retire them.

There was a period of about two years, as you all know, when the capitol of the United States was in the City of New York. George Washington lived there and it was a big city, but not big enough so that they could telephone for the groceries to be delivered or anything like that—about twenty-two thousand people there in New York. A good many things we or our wives buy in the stores had to be made to order. I am going to name two of them mentioned in American history: Mr. John Wolf was a shoemaker. He measured the feet of Mr. Washington and Mrs. Washington and her nieces, and he made shoes and boots for them to order, several times. It took about six weeks to get a pair made, and he delivered them and collected the price. When he took the order for the shoes, they talked over the kind of shoes, the finish, the style, and so on. He made them with his own hands and he sold his skill directly to the people who were going to wear the shoes.



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L. L. GRIFFITHS, Jr., Kalamazoo, Mich. HAROLD H. FISH, Rosemont, Pa.

Another man, whose name I don't remember, got an order from George Washington, and it took him about three months to fill this order and upon delivery, he collected from Mr. Washington five hundred forty-two dollars for making four hundred fifty pounds of paper for Mr. Washington. That was a pretty high price; we can't seem to get it today for some reason or another.

That man was a skilled paper maker, and those of you who have read the stories can picture just how he did it and the help that he had. But the point is each of these men who had the skill, sold it directly to the customer who was going to buy the product. John Wolf has gone out of business. There are two hundred forty-nine thousand people working as production workers in shoe factories in the United States and not one of them knows today the name or color of hair of any person who is going to wear shoes on which he is working. Between those two hundred forty-nine thousand production workers and you and me, the final customers for the shoes, is this long chain of management engaged in the job of selling.

Out here on the West Coast, two men with a power saw stand at the foot of a tall Hemlock tree. With their skill, and earning the high pay they get, they fell it, buck it and take the limbs off, and they turn it out as logs. Nobody wants to buy logs. People think that logs are high priced, but nobody wants to own them. These particular logs are going to a pulp mill. Nobody wants to own pulp. Nobody wants to save it and collect it.

The pulp is made into paper, let's say it is newsprint. Some Pacific Coast publisher buys it.

But the real purpose of the mill is not to make the paper. Many mills have gone broke because they owned too much paper. Even the newspapers don't want to own paper. They want to load it on the presses, have that paper come off covered with ink, 60 per cent paid advertising, 40 per cent news, which makes us buy the paper. These newspapers are sold for 5-7 cents.

That is where the money comes from to pay the wages of the men who stood at the Hemlock tree. Every man is very important in the chain; the packer in the shipping room and the man in the finishing room, in the wrapping room, the clean-up man—so is the man who makes the pulp, the man who makes the paper, and that so-and-so who comes along and runs the tests on the pulp and paper. These people are part of the selling organization. We honestly believe that, all of us, when we talk together as employers in this group. And I think we honestly believe that, all of us, when we sit around the conference table.

I think I once put it in words when I said our biggest job at the conference was not to argue each other out of a position, but to find a position that rep-

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resented the best job of selling that could be done; the best basis on which to sell the services of the largest number of people in these pulp and paper mills. We have been successful in doing it. We haven't always put it in those words. We must have known what we are doing, though.

I can agree with what John Burke said, there has been reasonable thinking on both sides. We have been able to keep these mills operating at a very high ratio through thick and thin years. We have been able to keep them operating always, with no interference because we couldn't agree with each other on the basis on which we were going to divide up this sales dollar. We will always be arguing about that, and never completely satisfied that we are dividing up the sales dollar rightly, but we do know that is what we are doing. And through the years, since 1934, the sales dollars have grown for these mills on the Pacific Coast. The number of mills has grown; the number of workers employed in the mills has nearly doubled, I think, in that sixteen or seventeen years.

I could make a very eloquent speech about what has happened to the wage rates in those sixteen or seventeen years, but I am not going to do it out of deference to the visitors who are here from other parts of the country. It is like the rooster rolling the ostrich egg, showing the hens what was being done in other countries.

I hope some of you can take a tour through the woods, either the forests of the Northwest or the Redwood forests of California and look at those trees. There happens to be one in one of our tree farm areas, about sixteen feet in diameter just above the stump, and there are redwood trees three times that diameter, and they are enormous things. I hope you can go through those woods and look at some big tree, and look up at the top of it and say, "that is how the wage rates grow out here on the Pacific Coast."

There have been profitable and unprofitable years. Yes, the industry has prospered. There have been profitable years in which enough profit was gained so that a thousand new jobs could be created by the reinvestment of that profit. That has happened in the last three years. Hundreds of millions of dollars have gone into the expansion and modernization of your plants. We are going to compete with your plants in all the rest of the United States; we are going to compete with other industries and the competition is necessary. It is not just competition against some other manufacturer of pulp and paper. We are not ambitious here, neither the union representative nor the employer representative, to run you out of your jobs in any other pulp and paper mill in the United States. Our competition, our sales job, consists of finding new uses and new outlets for the products of our mills. We are doing that every day, and we are spending money in the hundreds of thousands of dollars in the search for the way to make paper more useful to the population of the United States.

We have gotten along well out here. I get pretty disgusted sometimes reading some of the national magazines that tell about this collective bargaining on the Pacific Coast. It sounds very much like the greetings of the follower of a prophet who makes his headquarters on the Atlantic Coast and says, "Peace, it's wonderful." Ever hear of him?

Peace isn't wonderful, the kind that we have had, but the achievement of understanding has been wonderful. It has been difficult; it will always be difficult as long as there are men around like John Sherman and a few others. Some of the old duffers will die off some day and then I think it will even be more difficult than it is now. But we have worked our way forward. We never knew from year to year what the next year's problems would be.

In the remarks that I quoted from John Burke, he said he would emphasize that in a generation the greatest change was the changed attitude of the employers. I have been watching unions for a long time, too, and I think that by and large there has been a changed attitude on the part of unions. More and more of them are learning the sound economic sense and the sound social sense which for more than a generation has characterized the two great International Brotherhoods in the pulp and paper industry.

And today, most of the time, I think, the representatives of our industry—and incidentally, our Association in these years has had to gradually grow into the maintenance of a year-around office with a staff of three people in it—most of the time of these people is not spent in trying to find out how to violate or who did violate some clause in the union agreement. Most of their time is not spent in running down grievances and advising employers how to keep out of trouble. Most of their time by far, is spent in fields that are not negotiated at the negotiations, but in fields of activities that are of tremendous importance to both the management and the workers in those mills. The change in attitude that I see today not only in your unions but in many others in the American labor movement, is the shouldering of responsibility for cooperation as members of the industrial team, members with management in such areas as the prevention of accidents and the promotion of training and the promotion of residential and social and community needs of the areas where the workers live.

I wish that I could take the whole afternoon to talk to you about the great achievements of the workers in these mills out here in the reduction of accidents in the last four years. It is an almost incredible story of a seventy-five per cent reduction in accidents directly traceable to a program of cooperative planning and cooperative execution, which was proposed to us by Vice President Sherman four years ago and which we willingly accepted.

That was in 1946. In 1936, in our clumsy way, we employer representatives tried to sell a similar idea to the union representatives, and they set us right back on the backs of our necks. We didn't get to first base with it. They were still a little bit suspicious of us, and so we stumbled along and we learned a little bit about how to promote safety in the intervening years.

They talked to us in 1934 about a seniority clause and we set them back on the backs of their necks, plenty. They talked to us about a referendum vote; we were horrified. The "goldfish bowl"—the second year we would have none of it.

We both change from year to year. The greatest thing I hope to see in the future years is our broadening interest in the fields where we can work together, where it is to the interest of the industry—safety, health protection, welfare, the sale of more of our time and effort to more customers for more uses. And then I hope we don't get so cooperative that we will gradually pass up these yearly talks that we have here, in which we develop broad measures that offset any of the sluggishness of the rest of the year, in which we have such a tonic of antagonistic discussions and rising tempers so that we need a week or two to cool off afterwards. I think those talks are good for us. I shall be very sorry when the time comes for me to move into the background and not be present to catch these verbal thrusts that come from the delegates at the other side of the table. I have even come to enjoy the nasty looks and the sarcastic remarks that my good brothers on the other side of the table throw at me, because I know they are all part of the game and we are all headed toward the same answer.

With all of us understanding the fact that we are engaged in the same enterprise and that it is the selling of our time to ultimate customers, we will always have reasons to disagree, to argue and to come to a reasonable settlement and understanding about how we are going to divide up that sales dollar that we get from the customers. I know I can speak for all of the fifty thousand stockholders or more in the companies represented in this Pacific Coast set up—probably closer to a hundred thousand stockholders. I know I can speak for them and their representatives, their hired men who are the managements of these mills, those of us who work in the companies, in saying that we have complete confidence in the honesty and integrity, intelligence and reasonableness of the men with whom we have had to deal in the last sixteen or seventeen years. I mean not only the International representatives who sit at the discussion table and the delegates who

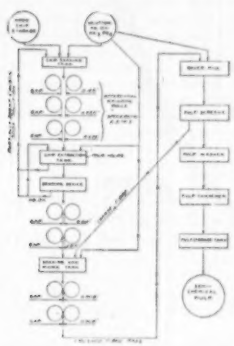
sit behind them, but the men and women who work in these mills, scattered over an area of fifteen hundred miles, men and women engaged as our partners. We have confidence in them and we want to merit their confidence in us, because together, whether you like it or not, in New York and Florida and Alabama and Michigan and Wisconsin, whether they like it or not, we are going to make this the best section of the pulp and paper industry in the world in which to live and work and cooperate and argue.

Patent Abstracts

● *In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.*

U.S. 513,861 — Methods of Pulp Manufacture. Francis G. Rawling, Luke, Md. Filed December 11, 1943. Published November 7, 1950. Class 92–13. 1 sheet of drawings. 33 pages of specification.

In this application woody material (examples: oak, poplar or other hard woods, bagasse) are first reduced to chips or other subdivision, are then leached in aqueous alkaline solution which is below a definite alakli concentration and below a definite temperature during treatment (examples: .1 to 1 gram per liter NaOH at a temperature not exceeding 50 C.). The purpose of the leaching step is not only to soften the pulp but to remove therefrom color bodies which are responsible for the later discoloration of the pulp.



Such a solution does not effect discoloration as is produced by stronger alkalies. After this leaching, the woody material is disintegrated by mechanical means consisting of oppositely moving rolls through which the material is passed a number of times. After each pass, the rolls are moved closer together. Also the rolls turn at different relative speeds. Examples of the distance apart of the rolls and the speed ratios are given in the drawing. The pulp so produced is then further refined if necessary in a suitable mill such as a Bauer or a ball mill. The yield of pulp from a cord of oak would be approximately 3,000 lbs. of air dried pulp.

Various modifications are disclosed involving the steps of first treating chips with dilute sodium hydroxide solution followed by cooking at atmospheric pressure under mild conditions.

U.S. 2,530,407 — Pressure Roll for Forming Bonded Fiber Webs. John J. Smith, Springfield, Mass., assignor to Chicopee Manufacturing Corporation. Filed November 29, 1944 — Issued November 21, 1950.

Apparatus for making bonded fiber webs comprising in combination a pair of pressure rolls having elastic outer portions, the rolls being adapted to be rotated to feed a fiber web between them, the suface of each roll being composed of interspaced flexible elements having relatively high and relatively low compressibility respectively radially of the roll, and means for urging the rolls together to deform the surfaces into a substantially plane surface of contact between the rolls and to move the outer surfaces of the elements of high compressibility radially with respect to the surfaces of the elements of low compressibility, whereby the high compressibility elements will move radially with respect to the low compressibility elements as the surfaces of the rolls separate from each other in rotating.

U.S. 2,530,468—Process for Generation of Chlorine Dioxide. Willis S. Hutchinson, St. Paul, Minn., assignor to Mathieson Chemical Corporation. Filed October 21, 1947 — Issued November 21, 1950.

In the process for the generation of chlorine dioxide by reacting nitrogen peroxide with a chlorite of a metal of the class consisting of the alkali and alkaline earth metals resulting in the formation of the corresponding nitrite, the steps of reacting a relatively non-volatile acid with the nitrite whereby a gas mixture of NO_2 and NO is evolved, oxidizing the NO of the mixture to NO_2 by admixing excess air therewith and reacting the NO_2 with further chlorite to generate additional chlorine dioxide.

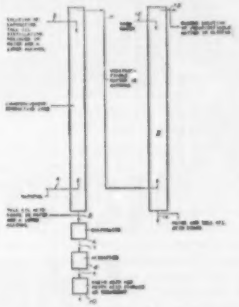
U.S. 2,530,787 — Paper Container. Roy S. Sanford, Oakville, Conn., assignor, by mesne assignments, of one-half to Ex-Cell-O Corporation, Detroit, Mich., a corporation of Michigan, and one-half to a group comprising Ace C. Fessenden, Chicago, Ill., and Ace Carton Corporation, Chicago, Ill. Filed December 6, 1945 — Issued November 21, 1950.

The method of sealing an open end of a paper board container having a plurality of side walls arranged to provide a polygonal cross section which comprises coating with a flowable adhesive a plurality of panels, said panels when overlapped forming a closure for said open end, overlapping said coated panels at said open end in superposed relation to close the open end of the container, at least a pair of said plurality of panels being positioned within the container and subjecting one face of said superposed panels to pressure of a value sufficient to flow the adhesive outwardly to contact the walls of the container to seal all openings and cracks and to bond at least said pair of panels directly to the container walls, and to bond all of said panels together while simultaneously supporting the other face of the panels over the entire area thereof, and simultaneously supporting the exterior walls of the container adjacent the panels against movement outwardly in a direction at right angles to the vertical axis of the container in response to the pressure exerted by the outwardly flowing adhesive.

U.S. 2,530,809—Fractionation of Tall Oil. Roger M. Christenson and Stewart W. Gloyer, Milwaukee, Wis., assignors to Pittsburgh Plate Glass Company. Filed August 23, 1949 — Issued November 21, 1950.

A process of obtaining the unsaponifiable matter of tall oil in concentrated form, which process comprises making up a solution of the tall oil soaps containing the unsaponifiable matter of tall oil from the manufacture of paper pulp in a concentration of about 5 to 25 per cent in isopropyl alcohol and water with the final solution containing from 15 to 50 per cent of isopropyl alcohol and the remainder water, and extracting out the unsaponifiable matter in said solution by countercurrently flowing the solution in contact with naphtha in a ratio of 1 to 20 parts by volume per part of tall oil soap solution at a temperature of 80 to 130° F., by continuously introducing the solution into an upper portion of an extraction zone and continuously introducing naphtha into a lower portion of the same zone, drawing off the solution of isopropyl alcohol and water at the lower end of the zone at a point below that of introduction of the naphtha and drawing off the solution of unsaponifiable matter in naphtha at the other end of the system at a point above that of introduction of the solution and evaporating the naphtha from the solution of unsaponifiable matter.

U.S. 2,530,810 — Separation of Unsaponifiable Matter From Tall Oil Residue. Roger M. Christenson and Stewart W. Gloyer, Milwaukee, Wis., assignors to Pittsburgh Plate Glass Company. Filed August 23, 1949 — Issued November 21, 1950.



A method of obtaining the unsaponifiable matter of tall oil, which method comprises saponifying with alkali a distillation residue of tall oil comprising 20 to 50% fatty acids, 20 to 50% rosin acids and 10 to 30% unsaponifiable matter, dissolving the resultant saponified mixture in water and isopropyl alcohol to give a final concentration of 7 to 50% isopropyl alcohol, then countercurrently extracting the unsaponifiable matter from the solution with naphtha and evaporating off the naphtha from the unsaponifiable matter.

U.S. 2,530,906 — Sheet Packing and Method of Manufacture. Henry J. Palumbo, Somerville, N. J., assignor to Johns-Manville Corporation, New York, N. Y. Filed June 28, 1947 — Issued November 21, 1950.

A flexible sheet which resists embrittlement and hardening at extreme high and low temperatures comprising a mixture of infusible insoluble polymerized diakyl silicone binder and reinforcing fibers including 15-50% of crocidolite asbestos fibers, the alkyl radicals in said binder belonging to the group consisting of methyl, ethyl, propyl, and butyl.

Can. 469,214 — Corrosion Inhibitors. John A. Elder, Jr., Plainfield, New Jersey, U.S.A., assignor to Merck & Co., Inc., Rahway, New Jersey, U.S.A. Filed December 11, 1946 — Issued November 7, 1950.

The method of inhibiting corrosion in an aqueous medium in contact with a polymetallic system comprising adding an alkali metal chromate in amounts ranging from about 0·25 per cent to 1·00 per cent, succinic acid in an amount up to 2·5 per cent and 2-methyl-2-aminopropanol-1 in amounts up to 1·25 per cent, said percentages being based on the metric volume of said aqueous medium, and adjusting said solution so that the operating pH is about 10.

Can. 469,249—Methods and Apparatus for Forming Cartons. Reynolds Guyer, St. Paul, Minnesota, U.S.A., assignor to Waldorf Paper Products Company, St. Paul, Minnesota, U.S.A. Filed August 2, 1946 — Issued November 7, 1950.

The method of forming a carton having a bottom panel, side wall panels foldably connected thereto, and locking panels on certain of said side wall panels designed to engage in slots in the next adjacent panel, said slots extending substantially parallel to the fold lines connecting the slotted panels to said bottom panel, the method consisting in simultaneously bending upwardly the side walls of the carton, the bending of the slotted panels opening said slots, and simultaneously folding the locking tabs into engagement with the co-operable opened slots.

Can. 469,300—Separation of Chlorine and Sulphur Dioxide. James K. Farrell and William C. Eichelberger, Syracuse, New York, U.S.A., assignors, by mesne assignments, to Allied Chemical & Dye Corporation, New York, New York, U.S.A. Filed June 7, 1943 — Issued November 14, 1950.

A process for the separation of chlorine from sulphur dioxide, which comprises contacting a gaseous mixture containing these substances in which the volume ratio of chlorine to sulphur dioxide is at least about 1:10 with sulphuric acid liquor containing at least about 75 per cent H_2SO_4 at supratmospheric pressures in the neighborhood of about 3 atmospheres total and at a temperature above the freezing point of the acid liquor but below about 60° C., and separating a solution containing sulphur dioxide dissolved in the sulphuric acid liquor from undissolved chlorine.

A process for the separation of chlorine from sulphur dioxide which comprises introducing a gaseous mixture containing these substances in which the volume ratio of chlorine to sulphur dioxide is at least about 1:10 into a vessel through which is descending sulphuric acid liquor containing at least 75 per cent H_2SO_4, the temperature of the acid liquor being maintained above its freezing point but below about 60° C. and the total pressure in the vessel being in the neighborhood of about 3 atmospheres, withdrawing chlorine substantially free of sulphur dioxide from the top of the vessel, withdrawing sulphuric acid liquor containing sulphur dioxide and a small amount of chlorine dissolved therein from the absorption zone to a partial stripping zone wherein a gas rich in sulphur dioxide is evolved, returning the gas thus evolved to the lower portion of the absorption zone, and recovering the sulphur dioxide remaining in the partially stripped sulphuric acid liquor.

Can. 469,370—Methods and Apparatus for Treating Crude Fibrous Materials. Frank J. Kochne, Martinville, New Jersey, U.S.A., assignor to Johns-Manville Corporation, New York, New York, U.S.A. Filed November 19, 1945 — Issued November 14, 1950.

The method of dry crushing and opening coarse fibrous material which comprises, forming and maintaining a thin suspension of the coarse material in a rapidly rotating gaseous fluid vortex reducing and fiberizing the charge material by centrifugal impact against striking surfaces and by mutual impingement of particles, deflecting the rotational gas flow inwardly at said striking surfaces and developing inertia momentum of incompletely fiberized material tending to retain it within the vortex, and selectively removing suitably reduced and opened fibres tangentially outward from the attrition zone before excessive attrition thereof by reversing the direction of flow of said reduced and opened fibres at the periphery of the vortex.

The method of dry crushing, fiberizing and cleaning coarse, fibrous material which comprises, establishing and maintaining a thin suspension of the material in a rapidly rotating gas vortex about a vertical axis, reducing and fiberizing the material by centrifugal impact against peripheral striking surfaces and by mutual impingement of coarse particles, deflecting the rotational gas flow inwardly at said striking surfaces and developing inertia momentum of incompletely fiberized material tending to retain it within the vortex, continuously withdrawing air from the periphery of the vortex in a direction which is tangential to the vortex and generally opposite in direction to the direction of vortex flow, controlling the rate of air removal from the vortex by maintaining a regulated pressure drop between the zone of the vortex and the path of air removal, selectively removing the suitably reduced and fiberized fibres from the vortex by entrainment in the outgoing air, and separating granular and dust impurities from the air suspended fibres by selective cyclone classification.

Can. 469,479—Fuel Burning Apparatus. James Fletcher, Akron, Ohio, U.S.A., assignor to Babcock-Wilcox & Goldie-McCulloch, Ltd., Galt, Ontario, Canada. Filed November 13, 1945 — Issued November 21, 1950.

In combination with a furnace wall having a row of passages therein arranged to discharge combustion air into the furnace in relatively narrow streams elongated in a direction transverse to said row, liquid fuel atomizers having fuel outlet ends in spaced alignment transversely of said row of passages at a location intermediate the ends of said row, each of said atomizers having its fuel outlet end formed with ports arranged to discharge atomized fuel in a spray pattern of generally butterfly form limited to a relatively narrow band extending across the outlet ends of said passages, said individually formed spray bands diverging in opposite directions from their origins at said outlet ends and collectively forming a composite pattern of spray overlying furnace wall area included between the outermost combustion air passages in said row.

The combination with a furnace wall having a fuel burner opening therein, which comprises, fuel burner means within said opening having elongated fuel discharge tips terminating in spaced relation in a row adjacent the furnace and of said opening, said tips being elongated in a direction transverse to said row, means defining a relatively narrow combustion air passage paralleling each of said tips, and fuel burner means having outlets positioned between tips in said row at locations displaced from air passages associated with said tips, said outlets being arranged to discharge fuel in jets directed across the furnace end outlets of said combustion air passages.

Can. 469,481 — Wire Guides. Lloyd Hornbostel, Beloit, Wisconsin, U.S.A., assignor to Beloit Iron Works, Beloit, Wisconsin, U.S.A. Filed January 23, 1948 — Issued November 21, 1950.

In a paper making machine having a rotating roll and a belt-like element trained thereon, shiftable bearing means for journalling said roll, whereby the angular position of the axis of said roll is shiftable with respect to the path of said belt-like element, a feeler member in engagement with an edge of said belt-like element, said feeler member being shiftable by changes in axial position of said belt-like element with respect to said roll, a first reversible fluid motor having a movable output member and a control valve member shiftable by application of small forces thereto, means connecting said feeler to said control valve member to shift said control valve member in response to variations of axial position of the belt-like member with respect to the roll, a second reversible fluid motor having a movable output member and a control valve, means connecting said output member of said first fluid motor to said control valve of said second fluid motor, and means connecting said output member of said second fluid motor to said shiftable bearing means, whereby said bearing means are shifted by movement of said feeler member to maintain said belt-like element in a desired axial position on said roll.

Can. 469,488—Waterproof Treatment of Materials. John R. Elliott and Robert H. Krieble, Schenectady, New York, U.S.A., assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada. Filed February 8, 1946 — Issued November 21, 1950.

The process of rendering a non-water-repellent material water-repellent which comprises (1) treating said material with a composition comprising an aqueous solution of a water-soluble metallic salt of a hydrocarbon-substituted silanetriol, the metal ion of said salt being a member selected from the class consisting of alkali metals and alkaline earth metals, and (2) causing the formed hydrocarbon-substituted polysiloxane on the surface of the treated material to become water-insoluble by drying the treated material under mildly acidic conditions whereby the treated material becomes water-repellent.

Can. 469,604—Precipitation of Basic Calcium Hypochlorite. Richard Wayne Darbyshire, deceased, late of Trenton, Michigan, U.S.A., assignor to Wyandotte Chemicals Corporation, Wyandotte, Michigan, U.S.A. Filed September 13, 1946 — Issued November 21, 1950.

In the manufacture of high test bleach, the steps of reacting an ascending solution of calcium hypochlorite and calcium chloride with alkali metal hydroxide solution of greater density thereby forming solid basic calcium hypochlorite, permitting said solid basic calcium hypochlorite to settle down further through an additional quantity of unreacted ascending solution of calcium hypochlorite and calcium chloride to free it from the liquid phase resulting from the first-mentioned reaction step, and withdrawing from the system said solid basic calcium hypochlorite as a slurry in some of the unreacted hypochlorite and chloride solution.

STONE & FORSYTH BUYS SYMONS

GARDNER, Mass.—R. W. Symons has sold a controlling interest in the Symons Paper Co., Inc., at 509 Main street, to Stone & Forsyth Co., Cambridge, Mass., one of the largest and oldest paper and twine jobbers in New England. The two firms will do business jointly at 509 Main street with the same setup and personnel as formerly, except that Mr. Symons will not be so actively engaged as in past years because of ill health.

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CPP-4

SUPPLIERS

CLEVELAND TRAMRAIL announces Northwest sales representation. Nelson J. Leonard, who has long represented Cleveland Tramrail overhead materials handling equipment in the State of Washington, has been granted a franchise to cover the entire Northwest territory. Mr. Leonard's main office is located at 5764 28th Avenue N.E., Seattle 5, Washington.

HENRY DISSTON & SONS, INC., have appointed L. W. Jander to the post of sales manager of the Industrial Division to succeed J. F. Wilkinson, resigned. A veteran of 16 years with the Disston organization, Mr. Jander has been in charge of the eastern sales division operations since 1947.

EBASCO SERVICES, INC., opened its new and enlarged Washington, D. C., office at 1625 "I" Street, N.W., on December 15 The new office is centrally located in a modern office building just completed, and will continue under the management of W. B. Cosdon.

MINNEAPOLIS-HONEYWELL REGULATOR CO. is expanding its industrial production and operating facilities in Philadelphia. The new expansion is made possible by the purchase of the Thomas M. Royal plant. The company has also acquired about 60,000 square feet of undeveloped property in addition and adjacent to its new site.

Honeywell's Brown Instruments division employment is nearing the 2,000 mark, about 300 persons or 20 percent more than during the World War II peak.

The Honeywell-Brown expansion in Philadelphia is the second in less than two years. When the company moved into its new building at Wayne Junction in May 1949 it increased its overall facilities to about 300,000 square feet, compared with its then total of 231,000 square feet. The latest addition of 110,000 square feet, exclusive of undeveloped land, will almost double the area occupied in 1948.

D. J. MURRAY MANUFACTURING CO., Wausau, Wis., have elected the following executive officers: A. W. Plier, executive vice-president and general manager; D. J. Everest, vice-president; C. L. Durkee, director, vice-president and sales manager; W. A. Marquardt, secretary; P. W. Hoeper, assistant secretary; and Grover Keeth, assistant treasurer.

NAUGATUCK CHEMICAL DIV., U. S. Rubber Co., has appointed three new technical representatives for rubber latices and dispersions and the opening of a new area office in Charlotte, N. C. Announcement was made by Albert W. Holmberg, sales manager for latices and dispersions for Naugatuck chemical division.

The new area office has been opened at 611 West Fifth street, Charlotte, to give more complete service to the states of North and South Carolina, Georgia, Florida, Tennessee, Alabama and Louisiana.

Claude H. Allard has been named technical representative covering these states. Charles L. Howard has been named technical representative for the Akron, Ohio, territory. D. Leete L. Keefer has been appointed technical representative in Connecticut and upper New York State, while Arthur Thomas has been named assistant to the sales manager of latices and dispersions.

STEIN, HALL & COMPANY, INC., announces the appointment of Norman H. Nuttall as manager of its paper (mill) department to take the place of J. P. Strasser, resigned.

WYANDOTTE CHEMICALS CORP., Michigan Alkali Div., has moved its Cincinnati office to 825 Dixie Terminal Bldg., Cincinnati 2, Ohio.

CONVERTERS

U. S. ENVELOPE NAMES DALLAS MANAGER

DALLAS, Texas — United States Envelope Company has named Evert M. Anderson as manager of the new Southwest division. With U. S. Envelope since 1934, Mr. Anderson will direct operations of the company's new $1,000,000 Dallas manufacturing plant. The factory is scheduled to start production early in January and will make a full line of business and social envelopes and paper water cups. Containing about 50,000 square feet of space, the plant will serve Texas, New Mexico, Colorado, Oklahoma, Arkansas, Louisiana, and parts of Kansas and Missouri.

PAPERBOARD LAMINATING CORP.

NORWALK, Conn. — The Paperboard Laminating Corp., with headquarters here, started business November 1, 1950, specializing in laminating paperboard to foil and fancy paper. The officers are: Harold W. Kephart, president; Hugh D. Catty, vice-president; Louis C. Krauthoff, secretary and treasurer. U. C. Shropshire, is in charge of manufacturing.

The Paperboard Laminating Corp. is now producing foil board laminations and plans to specialize on the proper grades for use by the folding box manufacturers, display manufacturers, paper book match makers and others in similar fields. In addition, the company will temporarily supply a war packaging membrane while the need exists.

LILY-TULIP SALES TERRITORY

Lily-Tulip Cup Corp. has announced several changes in field sales assignments, including the establishment of a new Southeast Florida sales territory. R. W. Hollman, formerly territory manager of the North Florida territory, with headquarters in Jacksonville, will manage the new territory and will operate from Miami. John Bryan, formerly located in Atlanta, will replace Hollman in Jacksonville as manager of the North Florida territory.

William A. Morgan has been appointed soda fountain specialist for the company's North Central division and will make his headquarters in Detroit. Mr. Morgan formerly specialized on the mass feeding and transportation market in that division. His former duties have been assigned to Emil Gotsch who will concentrate on the Chicago area for the present.

It was also announced that Grant Yost, formerly a salesman in Chicago, has been appointed water cup specialist for that city.

DILLARD PAPER CHARTERED

CHARLOTTE, N. C.—The Secretary of State has issued a charter to Dillard Paper Co. of Charlotte, Inc., which proposes to deal in paper and paper products. Authorized capital stock is $250,000. Incorporators: S. S. Dillard, Greensboro; E. B. Spencer and J. S. Lucas, both of Charlotte.

CHARLES J. COHEN MOVES

PHILADELPHIA, Pa.—Charles J. Cohen Co., manufacturers of envelopes, have moved their office and factory to N.W. Corner 23rd and Chestnut streets, Philadelphia 3, Pa.

Mersey Paper Co., Ltd., of Liverpool, N. S., has announced it will redeem its outstanding $2.5 millions of $100 par 4½ percent preferred stock December 18 as 105 percent.

It has been decided to exercise the option given in the Income Tax Act and, by paying a 15 percent tax, convert its undistributed income on hand at December 31, 1949, into tax-paid undistributed income. Capitalization of the latter will be effected through issue to common stockholders of new 4½ percent cumulative redeemable preference shares to be created through action to be taken at stockholders' meetings.

Union Bag & Paper Corp. declared a regular quarterly dividend of 50 cents per share and an extra dividend of 50 cents per share on the capital stock, both payable December 15 to stockholders of record December 11. The corporation also announces the election to the board of directors of James L. Knipe, a vice president of the company.

Financial News

STOCK REPORT

	Per Share Earnings		Indic.	Dec. 19
PREFERRED STOCKS	Calendar Year 1949	12 Mo. to Approx. 9/30/50	Annual Divid. Rate	Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.14a	$3.75	$101¼
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.14a	4.00	113⅜
Celotex Corp. 5% Cum.	6.80c	8.75a	1.00	15⅛
Champion Paper & Fibre $4.50 Cum.	60.09f	97.99	4.50	106¼
Container Corp. of Amer. 4% Cum.	89.52	122.92	4.00	104¼
Crown Zellerbach $4.20 Cum.	54.38c	66.87	4.20	103½
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	13.70	2.50	52½
Flintkote Co. $4 Cum.	62.70	79.70	4.00	103¼
Robert Gair Co., Inc. 6% Cum.	13.79†	17.21†	1.20	18¼
International Paper Co. $4 Cum.	224.55	323.40	4.00	108½
Kimberly Clark Corp. 4% Cum.	85.27	124.87e	4.50	108⅛
MacAndrews & Forbes 6% Cum.	61.59	63.03	6.00	141
Mead Corp. 4¼% Cum.	51.37	88.30	4.25	94
Mead Corp. 2% Cum. Conv. 2nd	21.35*	36.20*	2.00	56½
Pabco Products, Inc. 4% Cum. Conv.	56.46	124.88	4.00	100¾
Rayonier Inc. $2 Cum.	9.54	17.45	2.00	35⅛
St. Regis Paper Co. 4.40% 1st A	30.74	52.38	4.40	94½
Scott Paper Co. $3.40 Cum.	51.15*	62.16*	3.40	98½
Scott Paper Co. $4.00 Cum.	51.15*	62.16*	4.00	106½
Sutherland Paper 4¼% Conv.	46.92	68.59	4.25	114⅜
U. S. Gypsum Co. 7% Cum.	283.37	429.37	7.00	184¾
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)17.15	2.00	23
West Virginia Pulp & Paper 4½% Cum.	61.28c	61.06i	4.50	109⅜
COMMON STOCKS				
APW Products Co.	(d)0.81	0.45	—	8
American Writing Paper Corp.	.04	0.86	0.50	8¼
Armstrong Cork Co.	6.57	7.84a	3.75	45¼
Celotex Corp.	1.65c	2.20a	1.00	14⅛
Certain-Teed Prods. Corp.	2.84	3.43	1.50	13⅝
Champion Paper & Fibre	5.15f	8.93	2.45	47½
Congoleum Nairn Co.	3.04	2.70a	2.00	22⅝
Container Corp. of America	4.23	5.14	2.50	31½
Crown-Zellerbach	6.02c	7.36	2.20	49
Dixie Cup Co.	7.44	9.87	1.50	45¼
Eastern Corp.	0.04	3.04	1.00	18¾
Flintkote Co.	4.33	5.48	3.00	24½
Robert Gair Co., Inc.	2.11†	2.69†	0.70	11½
Great Northern Paper Co.	4.87	3.73	3.00	44¼
International Paper Co.	7.12	8.65	2.50	50
Johns-Manville Corp.	4.83	6.38	3.50	47
Kimberly Clark Corp.	5.29	6.81e	1.80	46½
MacAndrews & Forbes Co.	3.64	3.74	3.00	39½
Marathon Corp.	3.29c	4.13i	1.40	33½
Mead Corp.	4.10	7.32	2.20	22⅝
National Container Corp.	0.95	2.00	0.75	10⅜
Pabco Products, Inc.	0.85	1.95	0.60	15⅜
Rayonier, Inc.	4.75	9.73	2.50	48¾
Ruberoid Co.	7.93	8.65	3.18	48½
St. Regis Paper Co.	0.91	1.63	0.60	11⅛
Scott Paper Co.	6.07	7.12	3.60	43⅜
Sutherland Paper Co.	4.62	6.47	2.75	43½
Union Bag & Paper Corp.	5.01	6.68	3.00	37¾
United Board & Carton	(d)1.61h	1.56j	0.50	17⅛
U. S. Gypsum Co.	13.51	17.87	10.00	98¼
United Wallpaper	(d)0.01	(d)0.57	—	2¾
West Virginia Pulp & Paper	8.58c	8.36i	5.00	72½

(a) 12 months to approximately 6/30/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(f) 9 months to 12/31/49
(h) Declared 25c payable Sept. 1, 1950
(i) 12 months to 7/31/50
(j) 12 months to 11/11/50
(*) Earnings per combined preferred shares
(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

Nekoosa-Edwards Paper Co., Port Edwards, Wis., net sales have risen from $7,482,564 in 1940 through a peak of $19,759,068 according to a ten-year management report titled "Since 1940."

H. R. MacMillan Export Co., Ltd., has declared a dividend of 12½ cents on Classes "A" and "B" stocks, both payable December 30 to stockholders of record December 9.

Abitibi Power & Paper Co. additional 10,296 preferred shares redeemed, reduced preferred outstanding to 1,052,223 shares.

Price Bros. & Co., Ltd., of Quebec, reports that a total of 547,580 common shares are currently outstanding.

UNDERWRITERS
DEALERS
BROKERS

Industrial, Utility, Railroad Bonds

Preferred and Common Stocks

•

KIDDER, PEABODY & CO.

Founded 1865

Members
New York and Boston Stock Exchanges and New York Curb Exchange

NEW YORK BOSTON
PHILADELPHIA CHICAGO

Sales and Branch Offices

Albany Newport
Altoona Providence
Baltimore Reading
Lowell Scranton
Minneapolis Springfield
New Bedford Wilkes-Barre

New York Teletype NY 1-193

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Most orders accepted, however, at price prevailing on date of shipment. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton	$105.00/110.00
Sheets	

F.o.b. Mills. C.l. Frt. allowed, dock, N. Y.

Kraft— pr cwt., 40# base wgt.

Standard Wrapping Rolls	$7.75/ —
No. 1 Wrapping Rolls	8.25/ 8.50
Standard Bag	† 7.50/ —

Tissues— per ream 24x36 (480) 10 lbs. 2500 lbs or more

Wh. No. 1 Frd.	$1.85 /$2.50
Wh. No. 1 MG	1.85 / —
Wh. No. 1½	1.75 / —
Wh. No. 2	1.65 / —
Kraft Non-Tar	1.70 / —
White Non-Tar	

Toilet— per case of 100 rolls—1 M sheets

Unbleached 4½x4½	$8.00/$8.25
Unbleached 4½x5	6.05/ —
Bleached 4½x4½	7.10/ 8.80
Bleached 4½x5	9.10/ —
Per Case of 50 rolls—2000 sheets	
Unbleached 4½x4½	$8.00/$8.25
Bleached 4½x4½	6.95/ —
Per Case of 100 rolls—1000 sheets	
Facial, 4½x5, 2 ply	$8.95/$9.85

Paper Towels— per case of 3750

Wh. Jr. M'tif'd 9¼x9½	$5.65
Br. Sr. M'tif'd 10x12	4.00
Br. Jr. M'tif'd 9½x9¾	3.50
Br. Jr. Sgl. fold 10x10¾	3.35
Blchd. 7½x11, 24/25 rolls	$6.00/7.00

Manila, per cwt.

No. 1 Jute Tag sheets*	$16.55/18.55
Reg. Jute M.F. 40-lb., sheets*	15.00/17.00
Wrapping Manila	8.75/ 10.50
Printing Manila	10.50/12.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

Fourth Quarter Contract Prices, Per Short Air-Dry Ton

Varying freight allowances — Atlantic Ports

	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$75.00/ —	$75.00/ 85.00	††82.50/ —		
Siderurus Pulping News	75.00/ —	75.00/ 85.00			
Soda, Bleached	130.00/ —	130.00/ —			
Sulphate, Bleached	128.00/167.50	141.00/ —	*165.00/167.50		Competitive
Sulphate, Unbl'd North'n		115.00/120.00	*135.00/165.00		
Sulphate, Unbl'd South'n	125.00/160.00				
Sulphite, Blchd. (S'ftw'd)	128.00/145.00	135.00/138.00	*160.00/ —	Competitive	Competitive
Sulphite, Blchd. (H'dw'd)	145.00/ —				
Sulfite, Semi-blchd.	128.00/ —				
Sulphite, Unbleached		117.00/120.00	*138.00/165.00		
Sulphite, Unbl'd (Glassine)		121.00/ —	*142.00/150.00		

* On dock. † Delivered.

First Quarter Indications, Per Short Air-Dry Ton*

Groundwood	$85.00/ —	$85.00/ —			
Sulphate, Bleached	$135.00/ —	175.00/ —	180.00/ —		
Sulphate, Unbl. Northn.		140.00/155.00	153.00/165.00		
Sulphate, Unbl. Southn.					
Sulphite, Blchd. (Sftwd.)	135.00/145.00		175.00/ —		
Sulphite, Unblchd.		132.50/150.00	153.00/163.00		
Sulphite, Unbl'd (Glassine)			157.00/ —		
Soda, Blchd.	142.50/ —	140.00/ —			

Gummed Tape— per bdl., 500 bdls. or more

90-lb. 375 ft. GSI	$6.90 / —
60-lb. 600 ft. GSI	6.90 / —
35-lb. 800 ft. GSI	7.93½/ —
35-lb. 500 ft. GSO	5.98 / —

Boards, per ton—

Filled News	‡$102.50/107.50
Plain Chip	‡ 105.00/107.50
Blchd. Mla. L.d. Chip	‡ 132.50/147.50
White Pat. coated .020	‡ 155.00/170.00
Kraft Liners 42 lb.	† 115.00/117.50
Kraft Corr. .009	† 122.50/126.00
Binders Boards	‡ 137.00/140.00

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	‡ $70.45/ —
100% Rag	‡ 62.45/ —
75% Rag	‡ 48.15/ —
50% Rag	‡ 38.90/ —
25% Rag	‡ 31.65/ —
Ledgers	**4 Ctns.**
	per cwt.
100% Rag Ex. No. 1	‡ $72.65/ —
100% Rag	‡ 63.90/ —
75% Rag	‡ 49.40/ —
50% Rag	‡ 40.20/ —
25% Rag	‡ 33.00/ —

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	‡ $19.05/$19.85
Plain	‡ 18.05/ —
Ledgers	**4 Ctns.**
	per cwt.
Watermarked	‡ $21.15/ —
Plain	‡ 19.35/ —

White Book
Conversion Coated — Case

	per cwt.
No. 1	‡ $23.40/$24.65
No. 2	‡ 21.90/ 23.40
No. 3	‡ 21.15/ 22.40
Machine Coated	
No. 1	‡ $18.15/ —
No. 2	‡ 16.15/ —
Uncoated	
No. 1 Antique (Watermarked)	‡ $19.15/ —
Offset	‡ 17.90/ —
A Grade E. F.	‡ 17.40/ 18.15
A Grade S. C.	‡ 14.15/ 18.65
B Grade E. F.	‡ 17.65/ —
B Grade S. C.	‡ 18.40/ —

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) ALL PRICES NOMINAL. SPOT OFFERINGS OR SPECIAL PACKINGS NOT INCLUDED.

	New York	Philadelphia	Boston	Chicago
	Dec. 13	Dec. 6	Dec. 11	Dec. 12
No. 1 Mixed Paper	$30.00/ 33.00	$26.00/ 30.00	$25.00/ 30.00	$33.00/ —
Boxboard Cuts	25.00/ 30.00	23.00/ 28.00	20.00/ 30.00	38.00/ —
Mill Wrappers	30.00/ 35.00	25.00/ 35.00	30.00/ 40.00	35.00/ —
No. 1 News	35.00/ 37.00	30.00/ 33.00	33.00/ 35.00	38.00/ —
Over-issue News	35.00/ —	32.00/ 40.00	36.00/ 40.00	41.00/ —
Corrugated Containers	52.00/ 55.00	42.00/ 45.00	48.00/ 53.00	52.00/ —
New Corrugated Cuts	52.00/ 55.00	45.00/ 48.00	50.00/ 55.00	62.00/ —
Double Kraft Ld. Corr. Cuts	90.00/100.00	90.00/ 95.00	95.00/105.00	120.00/ —
100% Kraft Corr. Cuts	125.00/140.00	110.00/120.00	110.00/125.00	135.00/ —
Used Kraft Bags	80.00/ 90.00	60.00/ 70.00	85.00/ —	65.00/ —
No. 1 Brown Kraft Paper	80.00/ 90.00	70.00/ 80.00	90.00/100.00	65.00/ —
Super Resorted Br. Kraft	100.00/105.00	85.00/ 95.00	100.00/135.00	90.00/ —
New Br. Kraft Env. Cuts	160.00/175.00	130.00/135.00	140.00/165.00	150.00/ —
New Br. Kraft Cuts	150.00/170.00	125.00/ —	130.00/150.00	140.00/ —
No. 1 Gdwd Shvs.	60.00/ 65.00	75.00/ 80.00	85.00/ —	75.00/ —
White Newsblanks	105.00/110.00	105.00/110.00	110.00/125.00	115.00/ —
No. 1 Flyleaf Shvs.	80.00/ 85.00	90.00/ 95.00	90.00/ 95.00	110.00/ —
No. 1 Soft Wht. Shvs.	175.00/190.00	170.00/175.00	175.00/195.00	175.00/ —
Super Soft Wht. Shvs.	190.00/200.00	180.00/ —	185.00/200.00	190.00/ —
Hd. Wht. Shvs.	185.00/195.00	185.00/195.00	195.00/ —	180.00/ —
Hd. Wht. Env. Cuts	200.00/215.00	195.00/210.00	200.00/220.00	190.00/ —
New Manila Env. Cuts	140.00/150.00	125.00/ —	125.00/135.00	115.00/ —
Col. Tab Cards	90.00/105.00	100.00/110.00	90.00/100.00	100.00/ —
Manila Tab Cards	150.00/170.00	160.00/170.00	175.00/ —	165.00/ —
No. 1 Mixed Ledger	85.00/ 95.00	85.00/ 90.00	80.00/105.00	100.00/ —
White Ledger	125.00/130.00	110.00/115.00	115.00/125.00	125.00/ —
No. 1 Book & Mag.†	45.00/ 50.00	30.00/ 35.00	40.00/ 50.00	35.00/ —
No. 1 Rep'd. Hvy. Books‡	55.00/ 65.00	50.00/ —	60.00/ 65.00	55.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings

ALL PRICES NOMINAL

No. 1 White Shirts	$19.00/$20.00
No. 1 Unblchd. Muslins	19.00/ 20.00
Blchd. Canton Flannels	16.00/ 17.50
No. 1 Lt. Silesias	12.00/ 13.00
No. 1 Lt. Prints	9.00/ 10.00
Wht. Bk. Blue Overalls (Blchable)	13.00/ 13.50
No. 1 Blue Overalls	7.00/ 9.00
Fancy Shirts	6.00/ 6.50

No. 1 Washabies	5.00/ 5.50
Suntan Khaki Cuts	9.00/ —
Mixed Khaki Cuts	7.00/ 8.00
Corduroy Cuts	4.50/ 5.00
Cottonades	4.50/ 5.00
Blchd. Underwear Cuts	20.00/ 21.00
Unblchd. Underwear Cuts	19.00/ 20.00

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$4.50/$5.00
Cotton Pants & Overalls	3.75/ 4.25
Thirds and Blues, Repacked	3.50/ 3.75
No. 1 Roofing Rags	2.40/ 2.50
No. 2 Roofing Rags	2.30/ 2.40
No. 3 & 4 Roofing Rags	2.20/ 2.30
Roofing Bagging	2.20/ 2.30

New Foreign Cotton Cuttings

(Prices to Mills, F.o.b. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$4.25/$4.75
New Mixed Cuttings	4.50/ 5.00
Light Silesias	7.50/ 8.00
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal
Fancy Shirt Cuttings	6.00/ 7.00
Light Prints	6.00/ 7.00
Bleachable Khaki, No. 1	5.50/ 6.00
Unbl. Khaki, No. 1	4.50/ 5.00

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	$6.50/$7.50
No. 2 White Cottons	5.50/ 6.00
No. 3 White Cottons	4.00/ 4.50
No. 4 White Cottons	3.50/ 3.75
Extra Light Prints	4.50/ 5.00
Old Light Prints	4.00/ 4.25
Med. Light Prints	3.50/ 3.75
Dutch Blue Cottons	3.75/ 4.00
Checks and Blue	3.00/ 3.50
Linsey Garments	2.75/ 3.00
Dark Cottons, European	2.25/ 2.50
Dark Cottons, Egyptian	2.15/ 2.30
Old Shopperies	2.10/ 2.25
New Shopperies	2.25/ 2.50

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$7.00/$8.00
Domestic Gunny, No. 1	6.75/ 7.25
Heavy Wool Tares	6.75/ 7.50
Foreign Manila Rope	4.25/ 4.50
Domestic Manila Rope	5.75/ 6.50
Jute Strings	6.25/ 6.50
No. 1 Sisal Strings	3.50/ 4.25
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	4.75/ 6.00
Domestic	5.50/ 6.50
Austr. Wool Pouches	7.50/ 8.00
New Burlap Cuttings	7.00/ 7.50

MATERIALS

Aluminum, sulfate:
- coml. bags, wks. cwt. 1.65
- iron-free c.l. 3.25

Alcohol, ethyl:
- tax free, dms. c.l. gal. .62 / .97
- dnld. East Miss.

Alcohol, methyl:
- Synthetic, Zone 1, dms. c.l. fit. alld. gal. .41

Casein, acid-prec.:
- dom. sh. pt. c.l. lb. .39 / .42
- imp. ex dock lb. .39 / .40

Caustic soda:
- c.l. wks. solid, 76%, cwt. 3.35
- flak. & grd. 100-lb. drums 3.75
- liquid 50% tanks 2.55
- liquid 70% tanks 2.65

China clay:
- dom. air-float. filler, c.l. wks. ton 10.00
- water-washed 11.00
- coating 16.00 /30.00
- imported, ex whse. short ton 15.20 /28.35

Chlorine:
- single-unit tanks, works cwt. 2.70
- multi-unit cwt. 3.20 / 4.40

Formaldehyde:
- USP, inh. dms, c.l. wks. lb. .0600/ .0625
- l.c.l. E. wks .0650/ .0675

Fuel oil:
- Bunker C, No. 6 Cal. hvy tanks, refinery bbl. 1.95 / 2.15
- light bbl. 2.05 / 2.10

Hydrogen peroxide:
- USP, 35% cbys. E. of Miss. lb. .24½/ .25½

Lime:
- hydrated, bags, wks. Buffalo ton 13.50

Rosin:
- B gum, drums, c.l. Savan. cwt. 8.00
- G, H, I, K cwt. 8.13
- FF, wood, do. cwt. 7.30

Rosin size:
- 70%, gum & pale grds, tank cars, south, sh. pt. cwt. 6.80 / 7.00

Salt cake.
- dom. bulk, c.l. wks. ton 17.00
- wks. frt. all. ton 20.00 /22.00

Soda ash:
- light, 58%, bags, wks. 1.50
- bulk cwt. 1.20

Sodium silicate 40°:
- turbid, c.l. wks. cwt. 1.20
- l.c.l. wks. 1.55 / 1.95

Sodium peroxide:
- dms. c.l. E. of Miss. lb. .19
- l.c.l. do. lb. .19½/ .20

Soybean, protein:
- chem. isol, wks. c.l. lb. .24 / —
- Cinn. and Chic.

Sulfuric acid:
- 60° Be. cbys. cl. wks. cwt. 1.75 / —
- l.c.l. wks. cwt. 2.05 / 2.60

Sulfur:
- crude, c.l. mines, contract, long ton 21.00 /22.00
- f.o.b vessels Gulf 22.50 /23.50
- Export, f.o.b. Gulf 25.00

Sulfur dioxide:
- liquid, coml. cyl. wks. lb. .09
- multi-unit cars lb. .0535

Starches:
- pearl corn, bags, c.l. Chic. cwt. 5.72 / —
- white dextrines, c.l. Chic. cwt. 7.09 / —
- potato, Idaho, c.l. wks. cwt. 5.00 / —
- potato, Maine, c.l. wks. cwt. 5.00 / —
- tapioca, conv. dextrines cwt. 6.75 / 7.50
- medium grds. Gulf and East Coast ports 5.75 / 6.25
- low, Siam, on dock N. Y. 5.00 / 5.50 nominal

Talc:
- domestic, 50-lb. sacks, c.l. wks. ton 25.00 /30.00

Titanium dioxide:
- anastase, c.l. deld., bags. lb. .21 / .21½
- l.c.l. deld. lb. .22 / .22½
- rutile, c.l. deld. lb. .23 / .23½
- l.c.l. deld. lb. .24 / .24½

N.B. For special market conditions see *Trends.*

IMPORTS

IMPORTS AT NEW YORK

Week Ending Dec. 16

Newsprint

News Syndicate Co., Inc., Begonia, Baie Comeau, 5044 rolls.

Madden Reeve Angel & Co., Inc., Sirius, Kotka, 250 rolls.

News Syndicate Co., Inc., Elin Hope, Baie Comeau, 7689 rolls.

Bowater Paper Co., Fort Avalon, Cornerbrook, 3433 rolls.

Wallpaper

C. A. Haynes Co., American Builder, Liverpool, 645 ctns.

Taub Hummel & Schnall, American Builder, Liverpool, 694 ctns.

S. K. Lonergan, Gripsholm, Gothenburg, 68 pkgs.

Taub Hummel & Schnall, Parthia, Liverpool, 1032 ctns.

C. A. Haynes Co., Parthia, Liverpool, 769 ctns.

Paperhangings

C. A. Haynes Co., Mauretania, Southampton, 18 bls.

Wrapping Paper

Van Oppen & Co., Edam, Antwerp, 63 cs.

(———), Edam, Antwerp, 8 cs.

Cigarette Paper

Globe Shipping Co., Ile de France, Havre, 2 cs.

Baryta Coated Paper

C. Happel, Washington, Hamburg, 108 cs.

Coated Paper

Johaneson Wales & Sparre, Gripsholm, Gothenburg, 2 cs.

Drawing Paper

Yorkminster Co., American Inventor, London, 1 cs.

Gauze Carbonizing Tissue Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 15 cs.

B. F. Drakenfeld & Co., City of Agra, Liverpool, 7 cs.

Gummed Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 27 cs.

B. F. Drakenfeld & Co., City of Agra, Liverpool, 42 cs.

B. F. Drakenfeld & Co., American Builder, Liverpool, 94 cs.

Printing Paper

Stevens Nelson Paper Corp., American Inventor, London, 1 cs.

Rice Paper

Hsin Dah Corp., H. Maersk, Keelung, 15 cs.

Photo Paper

Alco Photo Supply Corp., Queen Elizabeth, Southampton, 3 cs.

Alco Photo Supply Corp., Mauretania, Southampton, 12 cs.

Tenjugo Paper

Elliott Addressing Machine Co., H. Maersk, Keelung, 24 cs.

Miscellaneous Paper

Stevens Nelson Paper Corp., Axel Salen, Kobe, 2 cs.

Rags, Baggings, Etc.

Midwest Waste Materials Co., Argenfels, Antwerp, 204 bls. bagging, 146 bls scrap bagging, 21 bls. rags, 18 bls. jute thread waste, 12 bls. jute cuttings.

A. W. Fenton, Argenfels, Antwerp, 121 bls. pickerwaste, 33 bls. jute waste, 44 bls. scrap bagging, 13 bls. pickerwaste.

Midwest Waste Materials Co., Aktion, Antwerp, 26 bls. scrap bagging, 89 bls. bagging, 40 bls. pickerwaste.

Midwest Waste Materials Co., Harry T., Antwerp, 7 bls. rags.

Midwest Waste Materials Co., Harry T., Havre, 178 bls. rags, 46 bls. scrap bagging, 36 bls. bagging.

J. P. Fleissig, Harry T., Havre, 124 bls. rags.

Robbins Forwarding Co., Harry T., Havre, 132 bls. rags.

A. de Vries Trading Corp., Harry T., Havre, 176 bls. rags, 95 bls. scrap bagging.

Globe Shipping Co., Harry T., Havre, 4 bls. rags.

A. W. Fenton Co., Harry T., Havre, 26 bls. bagging, 33 bls. old cottons, 22 bls. old corduroys.

Chase National Bank, Harry T., Rotterdam, 87 bls. old bagging.

Harris Goldman Co., Harry T., Rotterdam, 67 bls. old bagging.

J. J. Rozendaal, Harry T., Rotterdam, 51 bls. old nappers.

E. J. Keller Co., Inc., Exochorda, Marseilles, 122 bls. rags.

Castle & Overton, Inc., Pres. Jefferson, Bombay, 58 bls. cotton rags.
(———), Pres. Jefferson, Bombay, 100 bls. jute rags.
D. Benedetto, Pres. Jefferson, Genoa, 112 bls. rags.
J. Eisenberg, Oriente, Havana, 29 bls. rags.
Bankers Trust Co., Exochorda, Leghorn, 166 bls. old rags.
(———), Exporter, Venice, 122 bls. rags.
1st National Bank of Boston, Exporter, Venice, 70 bls. jute bagging.
E. J. Keller Co., Inc., Exporter, Genoa, 118 bls. jute rags.
A. de Vries Trading Corp., Exporter, Trieste, 78 bls. scrap bagging.
(———), Stockholm, Gothenburg, 150 bls. rags.
Manufacturers Trust Co., Montreal City, Swansea, 120 bls. jute waste.
(———), Montreal City, Newport Mon, 446 bls. jute waste.
A. Siegle Corp., Parthia, Liverpool, 72 bls. jute waste.
Sadler Corp., Parthia, Liverpool, 39 bls. jute waste.
A. Siegle Corp., American Builder, Manchester, 166 bls. paperstock.
Darmstadt Scott & Courtney, American Builder, Manchester, 678 bls. jute waste.
Robbins Forwarding Co., American Builder, Manchester, 27 bls. rags.
A. de Vries Trading Corp., American Builder, Manchester, 98 bls. new rags.
Loumar Textile By Products, American Builder, Manchester, 58 bls. old bagging.
Salder Trading Corp., American Builder, Manchester, 128 bls. old bagging.
Chase National Bank, American Builder, Manchester, 55 bls. old bagging.
A. Siegle Corp., City of Agra, Liverpool, 54 bls. jute waste.
Salder Trading Corp., City of Agra, Liverpool, 50 bls. jute waste.
(———), City of Agra, Liverpool, 19 bls. blue jeans, 10 bls. khaki cuttings.
Robbins Forwarding Co., American Inventor, London, 31 bls. rags.
(———), American Inventor, London, 15 bls. rags.
J. Cohen & Son, American Inventor, London, 18 bls. new cuttings.

Old Rope, Etc.

Loumar Textile By Products, Marwarri, Calcutta, 100 bls. old hemp rope cuttings.
International Purchasing Co., Montreal City, Newport Mon, 45 coils old rope.
Bemis Bros. Bag Co., Montreal City, Newport Mon, 52 coils old rope.
C. Smiles, American Builder, Manchester, 168 bls. hemp, waste cordage.
(———), American Inventor, London, 57 coils old rope.

Casein

East Asiatic Co., Inc., Rio Jachal, Buenos Aires, 500 bags.
Crawford Co., Rio Jachal, Buenos Aires, 1000 bags.
Borden Co. Chemical Division, Rio Jachal, Buenos Aires, 1000 bags.
New York Trust Co., Rio Jachal, Buenos Aires, 1000 bags.
M. Snedeker Co., Mormacdove, Montevideo, 500 bags lactic.
H. D. Sheldon Co., Stavangerfjord, Oslo, 11 bags.

Woodpulp

American Viscose Co., Pentire, Vancouver, 11,250 bls. sulphite pulp.
Cellulose Sales Co., Stockholm, Gothenburg, 1535 bls. sulphite pulp.
Perkins Goodwin & Co., Gripsholm, Gothenburg, 178 bls. dry pulp, 200 bls. wet pulp.
(———), Exporter, Trieste, 1465 bls. sulphite pulp.

IMPORTS AT BOSTON

Week Ending Dec. 16

Guaranty Trust Co., Sygna, Buenos Aires, 1000 bags lactic casein.
Stone & Downer Co., American Builder, Liverpool, 361 ctns. wallpaper.
Josef Stein, Mormacmail, Buenos Aires, 15 bls. rags.
E. Butterworth & Co., Inc., K. C. Rogenaes, Antwerp, 119 bls. old bagging.
(———), Exporter, Trieste, 5115 bls. bleached sulphite pulp.
E. Butterworth & Co., Inc., American Builder, Manchester, 115 bls. old bagging.
E. Butterworth & Co., American Builder, Liverpool, 85 bls. old bagging, 85 coils old rope.
Harris Goldman Co., American Inventor, London, 60 bls. old bagging.
S. H. Waldstein, Pres. Jefferson, Bombay, 166 bls. old jute rags.

IMPORTS AT PHILADELPHIA

Week Ending Dec. 16

Wallworth & Co., Harry T., Antwerp, 84 bls. scrap bagging.
E. J. Keller Co., Inc., Harry T., Antwerp, 188 bls. old cotton rags.
Castle & Overton, Inc., Harry T., Antwerp, 100 bls. old cotton rags.
J. P. Fleissig, Harry T., Havre, 431 bls. rags.
E. J. Keller Co., Inc., Harry T., Havre, 464 bls. rags.
Bank of New York, Harry T., Rotterdam, 134 bls. old cotton rags.
E. J. Keller Co., Inc., Harry T., Rotterdam, 86 bls. old cottons, 169 bls. old prints, 52 bls. old fustians.
State Street Trust Co., Harry T., Rotterdam, 65 bls. old fustians.
(———), Harry T., Rotterdam, 50 bls. shoddies, 42 bls. cotton rags.
1st National Bank of Boston, Exporter, Venice, 38 bls. old cotton rags, 101 bls. old bagging.
J. H. Schroeder Banking Corp., Exporter, Trieste, 390 bls. woodpulp.
China American Paper & Pulp Co., Exporter, Trieste, 658 bls. chemical pulp.
Gottesman & Co., Inc., Rosa Thorden, Wifstavarf, Sweden, 2,400 bls. unbleached sulfite pulp.
E. J. Keller Co., Inc., Aktion, Rotterdam, 58 bls. old cotton rags.
(———), Aktion, Rotterdam, 66 bls. old cotton rags.

IMPORTS AT BALTIMORE

Week Ending Dec. 16

S. Shapiro & Sons, Argenfels, Antwerp, 50 bls. cotton rags.
(———), Harry T., Antwerp, 77 bls. dark cottons.
E. J. Keller Co., Inc., Harry T., Havre, 263 bls. cotton rags.
S. Shapiro & Sons, Harry T., Havre, 171 bls. cotton rags.
S. Shapiro & Sons, Harry T., Rotterdam, 33 bls. cotton rags.
(———), Exporter, Venice, 127 bls. old cotton rags.
(———), Exporter, Leghorn, 362 bls. dark cotton rags.
Bunge Pulp & Paper Co., Exporter, Trieste, 373 bls. chemical pulp.
(———), Edam, Rotterdam, 40 bls. filter paper.
Gottesman & Co., Inc., Livarden, Svano, Sweden, 4,872 bls. unbleached sulfite pulp.
Gottesman & Co., Inc., Tidaholm, Gothenburg, Sweden, 254 bls. unbleached kraft pulp.

IMPORTS AT NORFOLK

Week Ending Dec. 16

National City Bank, K. C. Rogenaes, Antwerp, 247 bls. jute waste.
E. J. Keller Co., Inc., Aktion, Rotterdam, 206 bls. old bagging.
Castle & Overton, Inc., Aktion, Rotterdam, 65 bls. scrap bagging.
Chase National Bank, Aktion, Rotterdam, 111 bls. scrap bagging.
A. de Vries Trading Corp., Aktion, Rotterdam, 58 bls. scrap bagging.
A. de Swaan, Aktion, Rotterdam, 43 bls. scrap bagging.

THE H. K. FERGUSON COMPANY
PAPER MILL ENGINEERS & BUILDERS
Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys
Executive Offices
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District Offices
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MERCHANTS

FORMS SALES AGENCY

Edward J. Sullivan, recently resigned Eastern sales manager of Gould Paper Co., will establish a selling agency in San Francisco about January 1, 1951, to act in the capacity of manufacturers' representative in the increasingly important Pacific Coast market area.

Mr. Sullivan has been associated with Oxford Paper Co., Fraser Paper, Ltd., Price & Pierce, Ltd., and Dennison Mfg. Co., in his career of twenty-five years in the pulp and paper industry and is a member of SAPI, TAPPI, Boston Paper Trade Assn., and New York Paper Trade Golf Assn.

NEW JOBBING FIRM

The George B. Goldman Paper Co. announces the formation of a new firm with George B. Goldman as president; George Rosenthal, vice-president; A. S. Goldman, secretary; Mervyn Golder, treasurer. George B. Goldman was formerly associated with the Goldman Paper & Paper Stock Co., which was founded by his father in 1900. The latter company was dissolved on December 16. The G. B. Goldman Paper Co. continues business at 316-320 N. 3rd street, Philadelphia 6, Pa., retaining most of the same equipment. The new company has absorbed the Berco Co., formerly operated by Mervyn Golder who becomes treasurer of the new organization. The new firm will act as job lot dealers in surplus, obsolete, side runs, seconds, rejects, misprints, by-products, damages by fire, water or transportation and also specializes in converting to custom order through slitting, sheeting and cutting.

WHITING NAMES CARTER

HOLYOKE, Mass. — William Whiting, president of the Whiting Paper Co., announced the appointment of John Carter & Co., Inc., Boston paper merchant house, as its New England agent for certain of its products.

This marks a significant change in the local company's traditional selling policy. The Whiting Paper Co. for many years has sold direct to its users

and not through jobbing houses as most mills do.

The Carter firm will handle for the New England trade the flat papers, commercial envelopes and boxed typewriter papers.

HAROLD R. ALLEY

Harold R. Alley, Chemical Engineer and Paper Technologist, associated with Charles E. King & Co., Paper Distributors and Converters at 960 W. Chicago Avenue, Chicago 22, Ill., has been named manager of the newly created Barrier and Packaging Sales Division which is specializing in the supply of specification materials for both domestic and expert packaging to war agencies and war contractors.

B. D. GOV. SALES DIV.

The enlargement of Bulkley, Dunton's facilities to serve the paper buying needs of the Government has been announced by J. C. Marvin, vice-president. This will involve direct representation in Washington, D. C., serving the Government Printing Office, the Federal Supply Service, the Treasury Department and the Army Map Service. Contact in Washington will be through William J. Calabrese who has recently joined Bulkley, Dunton.

ASSOCIATIONS

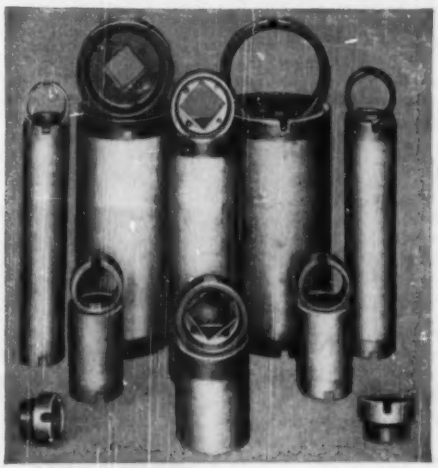
OHIO SECTION MEETING

The next meeting of the Ohio Section of TAPPI will be held at the Hotel Manchester, Middletown, Ohio, on January 9, 1951. The meeting has been arranged by R. A. Buck of the Sorg Paper Co. in Middletown, and he has been very fortunate to obtain as speakers Francis H. Snyder, president of the Snyder Chemical Co., and Dr. William Aiken, of the Goodyear Tire & Rubber Co. These men will discuss some of the most recent developments in the field of beater addition plastics and specialty papers. This is another in the series of meetings commemorating the fifteenth anniversary of the founding of the Ohio Section of TAPPI and following the talks of Mr. Snyder and Dr. Aiken there will be a general discussion on the subject "Fifteen Years of Progress in the Use of Plastics and Resins in the Paper Industry."

TAPPI Preliminary Program

ARRANGEMENT OF SESSIONS—FEB. 19-22, 1951

Monday	Tuesday	Wednesday	Thursday
Morning	Morning	Morning	Morning
General Session	Plastics Water Structural Fibrous Materials Alkaline Pulping	Wet Strength Statistics Chemical Engineering Paper Machinery	Fibrous Agri-Residue Mechanical Pulping General General
Afternoon	Afternoon	Afternoon	Afternoon
	Corrugated Containers Vocational Education Fundamental Research	Microbiological Microscopy Acid Pumping	Annual Luncheon
Committee Meetings	Paper Making (Fourdrinier)	Paper Making (Cylinder)	



ELIXMAN
CORES
CAPS

Straight wound paper cores made in sizes from 2" to 10" inside diameter with any thickness wall required.

Long draw protected slot caps of heavy gauge steel in all standard sizes.

Heavy duty caps with reenforced square hole. This patented feature of reenforcement gives added strength and durability.

Samples of caps or cores will be gladly submitted

ELIXMAN PAPER CORE COMPANY, INC.

CORINTH, N. Y.

GEORGE H. TOMLINSON AWARDED TAPPI MEDAL

NEW YORK — The nineteenth medal of the Technical Association of the Pulp and Paper Industry has been awarded to George H. Tomlinson, vice-president and director of the Howard Smith Paper Mills, Ltd., Montreal, P.Q.

Presentation of the medal will be made by J. N. Stephenson of the *Pulp and Paper Magazine of Canada* at the TAPPI Annual Luncheon to be held at the Commodore Hotel, New York City, on February 22, 1951.

Born in Toronto, Ont., in 1880 and educated at Upper Canada College and Trinity College in Toronto, Mr. Tomlinson pioneered in the development of pulp manufacture, especially in the economic utilization of the by-products. He has many accomplishments to his credit, including continuous vacuum brown stock washing, multiple-stage evaporation, stationary recovery furnaces, continuous causticizing, lignin plastics, and the magnesium bisulphite process.

NPA MOVES

Pulp and Paper Section, NPA, LeRoy Neubrech, chief, has been moved to 5th floor at 801 E street, Washington. It is next to the Tariff Commission Bldg.

NEW EQUIPMENT

Wedge-Slot Screens

Wedge-Slot Screens are made of wedge-shaped profile bars held in position by U-shaped holders and designed for maximum dewatering efficiency. Due to such distinctive design features as accurately space uninterrupted slots, specific advantages accrue for a wide range of processing and classifying operations, the manufacturer states. Made in special heavy-duty constructions for high-speed vibrators and shakers, drag conveyors, etc., and for equipment where extra heavy loads are fed to the screen. Can be supplied curved for such equipment as centrifugals, screw conveyors, coolers and dryers, etc., also for disc screen sections of any diameter. Also can be provided with side or end angles or flat bars.

300 GPM Kates Regulator

The 300 g.p.m. Kates regulator controls volume of flow to an evaporator handling a water solution of animal glue. The instrument shown in the photograph is the entire equipment, since the Kates regulator is direct acting and requires no air or electric circuits. Power for the control action is supplied by the fluid passing through the regulator. Controls flow down to 0.1 g.p.m., and the same principle may be employed in regulators as large as necessary for any practical application.

High or low pressures can be handled, and corrosion-resistant materials can be employed when necessary to control flow of acids, it is stated.

Midget Belt Feeder

The Midget Belt Gravimetic Feeder is the newest addition to the manufacturer's line of dry chemical feeders. It has an 8-inch belt with a one-foot weigh span and capacity of 3 c.f.m.

Features high accuracy; feeding range of 100 to 1; positive non-flooding feeding mechanism in stainless steel; infinitely variable speed transmission; single ¾ hp. motor, hopper agitation proportional to feed rate; automatic alarm device; one-piece molded sprocket driven belt; and a small stainless steel cabinet (17 x 30 x 17 in.).

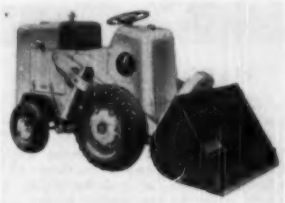
Miniature Ion Exchange Unit

The miniature ion exchange unit slips over faucet to de-ionize water for steam irons, batteries, soil testing, photographic and other laboratories. It was designed for small-quantity uses where more elaborate equipment would be impractical. Named Filtr-Ion, it is essentially a transparent plastic tube filled with Amberlite ion exchange resins which is slipped over the end of a cold-water faucet. Small holes in the top cap prevent excessive flow through the bed of resins. Deionized water is delivered through a small plastic tube. The unit is not intended to remove bacteria or impurities which are not ionized, the manufacturer states. As water passes through the apparatus, however, metallic and other ionic solids are taken out of solution by the mixture of anion and cation exchanges. Fiberglas filter trap physical impurities.

Tractor Shovel

The improved HA Payloader is a small, compact 12 cu. ft. tractor-shovel developed specially for processing and manufacturing plants where bulk materials must be unloaded from box cars and materials moved inside and outside of buildings.

Described as a faster, more rugged and more powerful machine, it features a new higher compression engine designed for power and economy; a larger clutch; roomier and more com-



fortable operator's compartment; more rugged steering gear and linkage; stronger main frame; a constant mesh transmission for faster, quieter operation.

High Capacity Chlorinizer

The high capacity visible-flow Chlorinizer is a new simplified apparatus for metering and controlling chlorine gas feed by manual, semi-automatic, or automatic proportional means. It will find use in the power industry for the control of slimes in cooling water systems, in chemical processing industries, and for the disinfection of water for domestic and industrial water supplies as well as in industrial waste treatment.

NEW LITERATURE

American Cyanamid Co. Bulletin, "Collective Volume II." Compilation of data on several new chemicals which have become available from the company's research laboratories during the last year.

Handling Devices Co., Inc. Bulletin, "Plantman Motorless Industrial Floor Sweeper." Lists its advantages and specifications for models 20" and 28".

Office of Small Business. Booklet, "Trieste Importers." Lists Trieste importers and the commodities in which they specialize.

Economic Cooperation Administration. Book, "France — Directory of Importers, ECA Financed Commodities." Contains the names and addresses of firms which have been given licenses by the French Govt. to import commodities financed by ECA from Sept. 1949 to March 1950.

E. I. du Pont de Nemours & Co. Booklet, "The Story of Duco Finishes." Designed to provide a pictorial record of the history of "Duco" and the impact it has had on the American scene. Also reference source.

American Hoist & Derrick Co. Catalog No. 400-R-2, "American Revolver Cranes for the Heavy Construction Industry." Shows how dam builders use these cranes on some of the world's biggest construction jobs.

The Patterson Foundry & Machine Co. Catalog No. 509, "The Patterson Conical Dry Blender." Describes the efficiency of these units for rapid blending and mixing of dry powders, colors, minerals, synthetic products, chemicals, plastics, medicinals, food products, roofing materials, etc.

British Constructional Steelwork Assn. Technical Brochure, "The Use of Structural Steel in Building." Gives further examples of structural steelwork design to conform with requirements of British Standard 449/1948.

Grinnell Corp. Booklet, "100 Years of Piping Progress — Grinnell 1850 to 1950." Covers Grinnell mfg., products, distribution, customers and various divisions.

Downingtown Mfg. Co. Bulletin No. 1150, "Downingtown Dryers, Frames and Rope Carriers."

Metallizing Engineering Co., Inc. Metco News, Vol. 5, No. 5, "Zinc." Briefs from industry on proven applications of metallizing and recommended methods.

Ampco Metal, Inc. Reprint, "Accelerated-Cavitation Research" by W. J. Rheingans. Deals with resistance of various metals to cavitation-erosion. Folder, "Corrosion Resistant Ampco Metal." Discusses Ampco alloys for corrosion applications, their physical properties; guide to chemical agents best handled.

National Safety Council. Series of six training films, "Speaking of Safety." Shows supervisors and foremen how to address and conduct meetings. Includes, "The Power of Speech"; "Butterflies in Your Stomach"; "The Key to Good Speaking"; 'On Your Feet"; "Now You're Talking"; "Ring the Bell."

The Swartwout Co. Bulletin S-201-A, "Swartwout Junior Feed Water Heater for Preheating Feed Water Supply in Small Power Plants of 300 hp. or Less." Lists specifications and shipping weights; illustrations, dimensional diagrams, cutaway view of the unit.

Standard Oil Co. Booklet, Nov. 1950, "The Lamp." Features "Tapline." Tells the story . . . "Across the Arabian desert, 1,000 miles of pipe will carry oil from the Persian Gulf direct to the Eastern Mediterranean."

WOODPULP PRICE RUMORS

OTTAWA — Although most Canadian producers have not yet indicated exactly what prices will prevail early in 1951 for woodpulp, it is already suggested in trade circles that such prices in 1951 will be up but not quite as much as believed earlier. Indeed, the boosts may be lower than now proposed by some foreign producers, including Scandinavian, so that Canadian producers may undersell these foreign producers in 1951.

With the demand expected to be strong for woodpulp, the actual prices may be determined by the old supply-and-demand principle and this would tend to raise prices somewhat next year, especially when it is recalled that prices have been rising steadily throughout 1950 due to the large orders from U. S. and the domestic sources as well as higher production costs.

OBITUARIES

Edward Clinton Hollingsworth, 68, vice-president in charge of sales of the River Raisin Paper Co. and a pioneer in the fibre container industry, died at his home in Monroe, Mich., on December 12.

He became associated with the River Raisin Paper Co. in 1914 as a sales representative and opened the New York sales office of the company. He continued as the company's New York

Announcing

the formation of the

G. B. GOLDMAN PAPER CO.

under the direction of

GEORGE B. GOLDMAN

formerly of Goldman Paper & Paper Stock Co.
(now out of existence)

. . . at the same address

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JOB LOT PAPER DEALERS

- SURPLUS
- SECONDS
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- OBSOLETE
- REJECTS
- DAMAGED by Fire, Water, Transportation
- SIDE RUNS
- MISPRINTS

We Specialize in Converting To Your Order

SLITTING . . . SHEETING . . . CUTTING

The BERCO CO. has been absorbed in the G. B. GOLDMAN PAPER CO. and Mr. Mervyn Golder will act in an executive capacity with the new company.

PHONES: LOmbard 3-6714-5-6

Clinton's

PM 3011

Pearl Starch

(For enzyme conversion)

- Specifically processed and controlled for ease of conversion under all practical mill conditions. Also, special grades of starch for:

- BEATERS
- COATING
- LAMINATING
- TUBSIZING

CLINTON

CLINTON FOODS INC., CLINTON, IOWA

representative until 1931, when he came to Monroe as general sales manager.

After the death of the company's president, G. H. Wood, in 1939, Mr. Hollingsworth was elected to the board of directors and on October 15, 1946, was elected vice-president in charge of sales.

Surviving are his widow, Margaret Bell; a brother, Thomas Hollingsworth of Syracuse, N. Y.; and a sister, Miss Nora Hollingsworth of St. Marys, Ohio.

James H. Allen, 70, vice-chairman of St. Regis Paper Co., died December 18. Mr. Allen was one of the outstanding pioneers in the development of the kraft paper industry in the South.

Frank L. Farrell, 70, a former general manager of the United Paper Board Co., Lockport, N. Y., and for many years prominent in the paper industry, collapsed and died December 14 while walking in Lockport.

Claude B. Gilchrist, 60, former personnel and safety director of the Bagley & Sewall Co., Watertown, N. Y., died December 9 in Detroit where he had been residing. He joined Bagley & Sewall in 1942 and was personnel and safety director for eight years, retiring last August 10. His widow survives.

David Franklin Peck, 73, president of the Hinchett Paper Co. and D. F. Peck Paper Co., Chicago, died in Miami Beach, Fla., on December 3. In addition to heading the two paper firms for some 30 years, Mr. Peck also was a director of the Crystal Tissue Co. in Middletown, Ohio. Surviving are his widow, Lyde; a daughter, Suzanne; and two sisters.

Ralph W. Mudgett, 69, retired midwest manager of the Nashua Gummed & Coated Paper Co., died Thursday, December 7. His widow, Elizabeth, and a son, Waldo, survive.

Jasper Kievit, 56, vice-president in charge of manufacturing of The Crystal Waxing Co., died December 6. Mr. Kievit had 28 years of service with the company, a subsidiary of The Crystal Tissue Co. "Jazz," as he was affectionately known by his friends and associates, served in World War I in the Army Air Corp as an aircraft mechanic. When he joined Crystal in 1922 he helped organize and put into operation the initial equipment for the waxing company. Later he was elected to the board of directors, then appointed works manager in 1939 and a year later appointed vice-president.

During the course of years he designed and patented several types of packaging and continuous wax roll equipment, including the equipment used exclusively by Crystal for applying metal edging to cutterboxes.

Christopher Edward Rice, 63, popularly known as "Ed," associated with the International Paper Co. for many years and for more than 40 years New England representative of the International Paper Sales Co., died suddenly in Newtonville, Mass., on November 26.

Harry W. Rish, 69, purchasing agent and manager of Jordan Filling Department of Shartle Brothers Machine Co., was stricken fatally with a heart attack. Mr. Rish came to Shartle Brothers in June, 1914, as shipping clerk and soon after was promoted to purchasing agent, a position which he held at the time of his death.

I. J. Stanley, Jr., 54, manager of heavy chemicals sales for Monsanto Chemical Co.'s organic division since 1934, died December 12, at Charleston, W. Va.

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2	Dec. 9*
1950	108.2	107.1	106.8	102.4	104.1	106.7
	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Dec. 3	Dec. 10
1949	*99.3*	*99.3*	*98.6*	*94.5*	*99.5*	*99.9*

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*94.6*	*92.3*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.6*	*89.7*	*96.0*	*98.2*	*89.8*	*88.0*
1950	97.6	100.8	101.9	100.5	100.8‡	103.2‡	90.8‡	105.8‡	101.7‡	106.7‡	105.8‡		

* Weekly capacity base increased by 452 tons.
r Revised.
‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.5	88.7	89.8	101.6	104.7	97.1	88.7	101.9
Year Average	87.8	88.1	89.4	100.1	104.3	96.2	88.0	

PAPERBOARD OPERATING RATIOS†

	Nov. 4	Nov. 11	Nov. 18	Nov. 25	Dec. 2	Dec. 9*
1950	102	101	103	100	101	106
	Nov. 5	Nov. 12	Nov. 19	Nov. 26	Dec. 3	Dec. 10
1949	*92*	*94*	*94*	*90*	*93*	*96*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*93*	*83*	*83*
1950	88	92	91	92	91	94	82	100	96	102	101		

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

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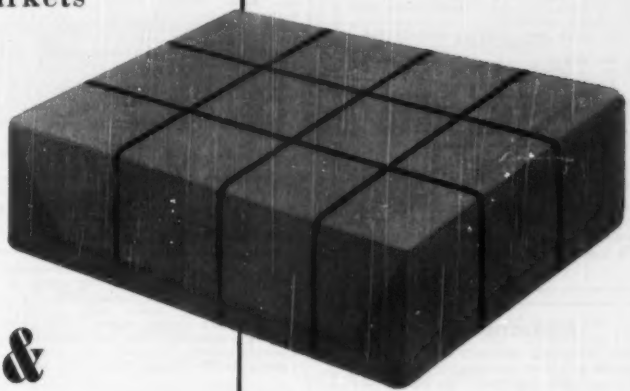

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J-12

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WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work. Excellent opportunity with old established machinery manufacturer. In reply, give resume of education, experience and current salary. Address Box 50-513 care Paper Trade Journal. TF

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WANTED—Paper Mill Superintendent for cylinder tissue mill making colored Twisting Tissue. Must be a practical man with knowledge of color matching and general mill maintenance. New York State location. Address Box 50-612 care Paper Trade Journal. J-5

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Tour Bosses, Machine Tenders, Backtenders, Beatermen, Converting Machine Operators, Laboratory Technicians—all thoroughly experienced in making full range of colors and qualities of fine grades including rag. Available due to company discontinuing manufacture of paper.

Address inquiries to
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J-5

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D-21

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48" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
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1—82" Type 10—Model 14. Late Type.
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1—32" Type 40, Model 2A.
1—65" Kidder Late Type Super Speed Junior Model Shear Cut Slitter & Rewinder.
1—36" Langston Type "A" Shear Cut Slitter & Rewinder.

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4—Seybold, 1—40" 10Z, 1—40" 6Z, 1—54" Holyoke, 1—54" 20th Century. 2—Oswego, 44" and 57", 1—Sheridan, 1—50", 2—Acme, 32" and 42", 1—S&W Undercut, 63".

2—81" Dieta Toilet Paper Perforators. Sheets 4½ x 4½ and 4½ x 5 and paper towels perforated 7½ and 13½".

1—81" Hudson Sharp Toilet and Towel Perforator.

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1—Pickett Garment Bag Machine, making bags 36" and 54".

1—Potdevin, Model 83 Sack Machine. 1 lb. to 5 lb. size range.

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1—30"—Friction Calender.
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1—Beloit Board Machine Coater. Used on 119" machine.

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1—18½ ft. long x 30" wide—with motor.

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2—152" face x 12" diameter—Ball bearing.
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2—147" face x 19" diameter.
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1—134" face x 38" diameter, with stainless steel shafts.

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2—Falk 7.5 hp—ratio 23.4-1 with motor.
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Above complete with panel controls, D. C. Generator and converter.

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5—143" face x 48" diameter.
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1—Farrel Birmingham—will take roll 144" face x 25" diameter maximum.

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Several small items both for the converting and auxiliary equipment.

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J-5

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2—150 or 175 H.P., 440 volt, 3 phase, 60 cycle, 450 RPM motors, including starting compensators and contactor boards. Exciters not needed.

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Serviceable Grocery Bag Machine
8 through 20 lb. sizes.
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Nichols Engrg. & Research Corp.

BARK PRESS
American Defibrator Co.

BARKERS AND CHIPPERS
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Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works
E. D. Jones & Sons Co.
The Moore & White Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BASIC WEIGHT SCALES
Thwing-Albert Instrument Co.

BEARINGS
Black Clawson Company
E. D. Jones & Sons Co.
Link Belt Company
Magnus Metal Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Timken Roller Bearing Co.
Valley Iron Works Co.

BEATERS AND JORDANS
American Paper Machy. & Engrg. Works, Inc.
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Morden Machines Co.
J. J. Ross Company
Ross Paper Machy. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Lukenweld Div., Lukens Steel Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

BELTING
Alexander Brothers
Allis-Chalmers Mfg. Co.
The Goodyear Tire & Rubber Company
Link Belt Company

BLEACHING AGENTS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Rohm & Haas Co.
Virginia Smelting Co.

BLEACHING APPARATUS
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Carthage Machine Co.
Kalamazoo Tank & Silo Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company

BOILERS
Babcock & Wilcox Co.

BOTTOMS
Kalamazoo Tank & Silo Co.
Valley Iron Works Co.

BOXBOARD SCALES
Thwing-Albert Instrument Co.

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M. W. Jenkins Sons, Inc.

BRUSHES
M. W. Jenkins Sons, Inc.
Gus Reidel & Son

BURSTING TESTERS
B. F. Perkins & Son Inc.
Testing Machines, Inc.

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Black Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Co.
Edward J. McBride
The Moore & White Co.
Perkins & Sons, Inc., B. F.
J. J. Ross Company
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

CARRIER ROPE
Williams Gray Co.

CASEIN
American Cyanamid Co.
Industrial Chem. Div.
Bunge Pulp & Paper Co.
Hercules Powder Co.

CASTINGS
Appleton Machine Co.
Black Clawson Company
Babcock & Wilcox Co.
Carthage Machine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Hamblett Machine Co.
Hardinge Company, Inc.
Lobdell Co.
Magnus Metal Corp.
Michigan Steel Casting Co.
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Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
Nichols Engrg. & Research Corp.
Ross, J. O., Engrg. Co.
Shartle Brothers Machine Co.

CHAINS
Link Belt Company

CHEMICAL COTTON PULP
Hercules Powder Co.

CHEMICALS
American Cyanamid Co., Industrial Chem. Div.
Bunge Pulp & Paper Co.
Calco Chemical Co.
Calgon, Inc.
Cowles Chemical Company
Diamond Alkali Co.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuffs Corp.
Geigy Co., Inc.
B. F. Goodrich Chemical Co.
Gotlesman & Co.
Hercules Powder Co.
Hooker Electrochemical Co.
The Kinsley Chemical Company
Monsanto Chemical Company
National Aluminate Corp.
Niagara Alkali Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Rohm & Haas Co.
Solvay Sales Corp.
Virginia Smelting Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

CHESTS
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
Shartle Bros. Mch. Co.

CHUCKS
Efficiency Engrg. Co.

CLEANING MATERIALS
American Cyanamid Company Industrial Chemicals Division
Cowles Chemical Company
The Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Pittsburgh Plate Glass Co.
Solvay Sales Corp.
Wyandotte Chemicals Corp., J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black Clawson Company
Farrel-Birmingham Co.
Hardinge Company, Inc.
Hudson Sharp Machine Co.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.

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Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Hudson Sharp Machine Co.
The Mayer Machine Co., Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G., & Co., Inc.

COATING MATERIALS
American Anode Div.
American Cyanamid Company Industrial Chemicals Division
E. I. Du Pont De Nemours & Co., Inc.
B. F. Goodrich Chemical Co.
The Goodyear Tire & Rubber Company
Hercules Powder Co.
J. M. Huber Corp.
Monsanto Chemical Company
National Wax Co.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

COGS
The N. P. Bowsher Co.

COMPLETE FOURDRINIER ROLL GRINDING
Manchester Machine Co.

COMPRESSORS
Allis-Chalmers Mfg. Co.
Nash Engineering Co.
Roots-Connersville Blower Corp.

CONDENSATE FILTERS
Hungerford & Terry, Inc.
The Permutit Company

CONDITIONING EQUIPMENT
Vapo Systems Co.

CONSISTENCY REGULATORS
Askania Regulator Co.
Bird Machine Company
DeZurik Shower Company
Paper & Industrial Appliances

CONSTRUCTION CONTRACTORS
C. M. Guest & Sons

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Black Clawson Company
Dilts Machine Works
Ebasco Services
Vance P. Edwardes
Frank W. Egan & Co.
Alvin H. Johnson & Co., Inc.
Main, Inc., Chas. T.
Roderick O'Donoghue
The Rust Engrg. Co.
Shartle Bros. Mch. Co.
J. E. Sirrine & Co.
John Waldron Corp.
H. G. Weber & Co., Inc.

CONTINUOUS DIGESTER
Paper & Industrial Appliances

CONTROLLERS
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Black Clawson Company
The Brown Instrument Co.

CONTROLS
Askania Regulator Co.
The Bristol Company
The Brown Instrument Co.
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

CONVERTING MACHINERY
Egan, Frank W., & Co.
John Waldron Corp.
Dilts Machine Works
Hudson-Sharp Machine Co.

CONVEYORS
Black Clawson Company
Industrial Brownhoist Corp.
Link Belt Company
Murray, D. J., Mfg. Co.
Ross Engineering Corp., J. O.
Shartle Brothers Mch. Co.

CORES
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Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co.
Sonoco Products Co.

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COTTON LINTER
Railway Supply & Mfg. Co.

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E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Thomas Flexible Coupling Co.
Valley Iron Works
Waldron Corp., John

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Industrial Brownhoist Corp.
Link Belt Company
Whiting Corp.

CURL TESTER
Thwing-Albert Instrument Co.

CUTTERS
Black Clawson Company
Dilts Machine Works
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Harris-Seybold Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
The Sandy Hill Iron & Brass Works
The Smith & Winchester Mfg Co.
Taylor, Stiles & Co.

CYLINDER MOULDS
Manchester Machine Co.

CYLINDERS
M. W. Jenkins Sons, Inc.
National Tube Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DECKLE WEBBING
Williams-Gray Co.

DEFIBRATORS
American Defibrator Co.

DE-INKING
Dilts Machine Works
General Dyestuff Corp.
Kinsley Chemical Co.
Roderick O'Donoghue
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DEINKING CHEMICALS
E. I. Du Pont De Nemours & Co., Inc.
General Dyestuff Corp.
Kinsley Chemical Co.
Monsanto Chemical Company
Nopco Chemical Co.

DE-MINERALIZING EQUIPMENT
Hungerford & Terry, Inc.
The Permutit Company

DEMULSIFIERS
Wyandotte Chemicals Corp., Michigan Alkali Div.

DENSOMETERS
Bunge Pulp & Paper Co.
W. & L. E. Gurley

DESIGN CONSTRUCTION
Ebasco Services

DETERGENTS
American Cyanamid Company Industrial Chemicals Division
Calgon, Inc.
Cowles Chemical Co.
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DEWAXING CHEMICALS
American Cyanamid Company Industrial Chemicals Division
General Dyestuff Corp.
Nopco Chemical Co.

DIFFERENTIAL SCALES
Thwing-Albert Instrument Co.

DIGESTERS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Lukenweld
Pusey & Jones Corp.

DIGESTERS (Continuous)
Paper & Industrial Appliances

DIRTEC
Bird Machine Co.

DISPERSING AGENTS
Calgon, Inc.
General Dyestuff Corp.
Monsanto Chemical Company
National Aluminate Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

DOCTORS
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Black Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Lodding Engineering Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Bird Machine Company
Lodding Engrg. Corp.
The Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DRIERS
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Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Hardinge Company, Inc.
Lukenweld
The Moore & White Co.
Murray Mfg. Co., D. J.
I. J. Ross Company
Red-Ray Mfg. Co., Inc.
Ross Paper Machy. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

DRILLED SUCTION COUCH ROLLS
Manchester Machine Co.

DRILLED SUCTION DRUM ROLLS
Manchester Machine Co.

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Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Farrel-Birmingham Co.
General Electric Company
Gibbs-Brower Company, Inc.
Rodney Hunt Machine Co.
Link Belt Company
Moore & White Co.
Murray, D. J., Mfg. Co.
Pusey & Jones Corp.
I. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Bros. Mch. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

DRUM WINDERS
Manchester Machine Co.

DRYER DRAINAGE
Stickle Steam Specialties Co.

DRYER ROLL PYROMETER
Thwing-Albert Instrument Co

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
M. W. Jenkins Sons, Inc.
E. D. Jones & Son Co.
Moore & White Co.
D. J. Murray Mfg. Co.
John Waldron Corp.

DUSTING BRUSHES
M. W. Jenkins Sons, Inc.

DYESTUFFS
American Cyanamid Company, Calco Chemical Div.
Bunge Pulp & Paper Co.
Ciba Company
E. I. du Pont de Nemours & Co., Inc.
Geigy Co., The
General Dyestuffs Corp.
National Aniline Division, Allied Chemical & Dye Corp.

ELECTRIC HYGROMETER
Thwing-Albert Instrument Co.

EMBOSSING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Gibbs-Brower Company, Inc.
Northern Engraving & Mch. Co
B. F. Perkins & Son, Inc.
John Waldron Corp.
Wheeler Roll Co.

EMULSIFIERS
General Dyestuff Corp.
Nopco Chemical Co.
Rohm & Haas Co.
Wyandotte Chemicals Corp.

ENZYMES
Rohm & Haas Co.
Vanderbilt Co., R. T.
Wallerstein Co., Inc.

EVAPORATORS
Davis Engrg. Corp.
Goslin-Birmingham Mfg. Co. Inc.
Murray, D. J., Mfg. Co.
Swenson Evaporator Co., Div. of Whiting Corp.

EXPANDERS
Mount Hope Machinery Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Hardinge Company, Inc.
Leeds & Northrup
Merrick Scale Mfg. Co.
The Permutit Company

FELTS
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Asten-Hill Mfg. Co.
Draper Bros. Corp.
Huyck & Son, F. C.
Lockport Felt Co.
Morey Paper Mill Supply Co.
Shuler & Benninghofen
Waterbury Felt Co.
Waterbury, H., & Sons Co.
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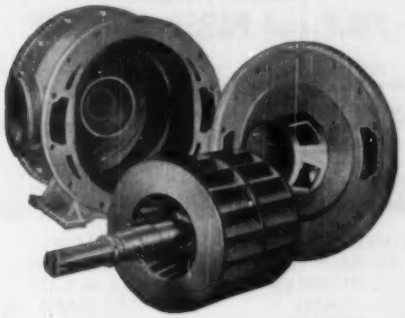
SIMPLICITY



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FELT GUIDES
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Frank W. Egan & Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Cyanamid Company, Industrial Chemicals Division
A. M. Meincke & Son, Inc.
Vanderbilt Co., R. T.
Wyandotte Chemicals Corp., Michigan Alkali Div.

FILTERS
Bird Machine Company
Green Bay Fdy. & Mch. Co.
Hardinge Company, Inc.
J. M. Huber Corp.
Hungerford & Terry, Inc.
Johnson Corp.
Moore & White Co.
J. O. Ross Engrg. Corp.
The Sandy Hill Iron & Brass Works
Walworth Company

FITTINGS
Crane Company
Shartle Bros. Mch. Co.
Walworth Company

FLEXIBLE COUPLINGS
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John Waldron Corp.

FLOORING, GRATING AND TREADS
The Goodyear Tire & Rubber Company
Norton Co.

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Lukens Steel Co.
The Sandy Hill Iron & Brass Works

FORK LIFT TRUCKS
Towmotor Corp.

FORMATION TESTERS
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

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Downingtown Mfg. Co.
The Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

FREENESS TESTERS
Testing Machines, Inc.

GASKETS
The Goodyear Tire & Rubber Company

GEARS
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De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Link Belt Company
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Westinghouse Electric Corp.
Western Gear Works

GRINDERS
Bridgeport Safety Emery Wheel Company
Carthage Machine Co.
Farrel-Birmingham Co.
Gibbs-Blower Company, Inc.
Lobdell Co.
Norton Company
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
Norton Company

GUIDES, WEB
Egan, Frank W., & Co.
The Moore & White Co.
Mount Hope Machinery Co.
John Waldron Corp.

GUMMING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
The Sandy Hill Iron & Brass Works

GUMS
National Starch Products, Inc.
Stein-Hall Co., Inc.

HEADS
Babcock & Wilcox Co.
Lukens Steel Company

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Davis Engrg. Corp.
Stickle Steam Specialties Co.
Westinghouse Electric Corp.

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Davis Engrg. Corp.
E. D. Jones & Sons Co.
General Electric Co.
Leeds & Northrup
D. J. Murray Mfg. Co.
Red-Ray Mfg. Co., Inc.
Ross Engineering Corp., J. O.
Stickle Steam Specialties Co.
Valley Iron Works Co.
Westinghouse Electric Corp.

HOSE (Air, Water, Suction, etc.)
The Goodyear Tire & Rubber Company

HUMECTANTS
Aktivin Division, Heyden Chemical Corp.
Nopco Chemical Co.
Wyandotte Chemicals Corp., Michigan Alkali Div.

IMPREGNANTS
American Cyanamid Company Industrial Chemicals Division
B. F. Goodrich Chemical Co.

INDENTING MACHINES
Dilts Machine Works

INDUSTRIAL TRACTORS
Towmotor Corp.

INKOMETER
Thwing-Albert Instrument Co.

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Beckman Instruments, Inc.
Bunge Pulp & Paper Co.
N. P. Bowsher
General Electric Company
W. & L. E. Gurley
National Technical Laboratories
B. F. Perkins & Son
Photovolt Corp.
Taylor Instrument Cos.
Testing Machines, Inc.
Thwing-Albert Instrument Co.
Williams Apparatus Co.

JOINTS
Johnson Corp.
Shartle Bros. Mch. Co.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Shartle Bros. Mch. Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
Heppenstall Company
E. D. Jones & Sons Co.
The Moore & White Co.
Taylor Stiles & Co.
Valley Iron Works Co.

KNOT BORING MACHINES
DeZurik Shower Company

KRAFT WRAPPING PAPERS
Canadian Newsprint Supply Co.

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Thwing-Albert Instrument Co.

LABORATORY EQUIPMENT
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Bauer Brothers Co.
Beckman Instruments, Inc.
Bird Machine Company
Dilts Machine Works
W. & L. E. Gurley
Egan, Frank W., & Co.
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories

WHERE TO BUY

Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works Co.
John Waldron Corp.
Williams Apparatus Co., Inc.

LAMINATING COMPOUND
National Wax Company

LAMINATING MACHINES
Dilts Machine Works
Egan, Frank W., & Co.
John Waldron Corp.

LAY BOYS
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Gibbs-Brower Company, Inc.
Hamblet Machine Co.
Moore & White Co.

LINTER COTTON
Railway Supply & Mfg. Co.

LUBRICANTS
Sinclair Refining Co.
Socony-Vacuum Oil Co.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

MAGAZINE REELS
Dilts Machine Works (Kohler Systems)

MATERIALS HANDLING
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Dilts Machine Works
Industrial Brownhoist
Shartle Bros. Mch. Co.
The Wellman Engrg. Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Lobdell Co.
Testing Machines, Inc.

MICRO-CRYSTALLINE WAXES
Bunge Pulp & Paper Co.
Moore & Munger
National Wax Company

MOISTURE CONTENT CONTROL
Stickle Steam Specialties Co.
Williams Apparatus Co., Inc.

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Fairbanks, Morse & Co.
General Electric Company
Reliance Electric & Engrg. Co.

NEWSPRINT
Bunge Pulp & Paper Co.
Canadian Newsprint Supply Co.

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The International Nickel Co.

NOZZLES
Link Belt Company

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Johnson Corporation
The Moore & White Co.
Shartle Brothers Machine Co.

PAPER CONDITIONING
Vapo Systems Co.

PAPER MACHINE DRIVES
Manchester Machine Co.

PAPER MACHINES
Bagley & Sewall Co.
Black Clawson Company
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Lukenweld
Moore & White Co.
Pusey & Jones Corp.
T. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
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Aktivin Division, Heyden Chemical Corp.
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Dietz Machine Works
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Shartle Brothers Machine Co.
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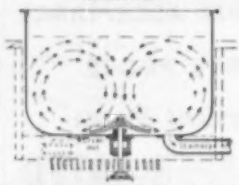

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PULP TESTERS
Paper and Pulp Testing Laboratories
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PUMPS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Black Clawson Company
De-Laval Steam Turbine Co.
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Downingtown Mfg. Co.
Fairbanks, Morse & Co.
Gibbs-Brower Company, Inc.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Roots Connersville Blower Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.

RADIANT BURNERS
Red Ray Mfg. Co., Inc.

RAG COOKING PROCESSES
The Kinsley Chemical Company
General Dyestuff Corp.
Rohm & Haas Co.

RAG CUTTERS
Gibbs-Brower Company, Inc.
B. F. Perkins & Son, Inc.
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RECAUSTICIZING PLANTS
The Dorr Company

RECOVERY SYSTEMS
Babcock & Wilcox Co.
Chicago Bridge & Iron Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones Corp.
Ross Engineering Corp., J. O.
Valley Iron Works Co.

REELS
The Appleton Machine Co.
Black Clawson Company
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.
Downingtown Mfg. Co.
Hudson Sharp Machine Co.
Moore & White Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Bauer Brothers Co.
Dilts Machine Works
Gibbs-Brower Company, Inc.
Anton J. Haug
E. D. Jones & Sons Co.
Morden Machines Co.
Murray, D. J., Mfg. Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sutherland Refiner Corp.
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REGULATORS
American Paper Machy. & Engrg. Works, Inc.
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
DeZurik Shower Company
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
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Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
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RESINS
American Cyanamid Company, Plastics & Resins Division
The Dow Chemical Company
B. F. Goodrich Chemical Co.
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ROLLS
Appleton Machine Co.
Black Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Farrel-Birmingham Co.
Gibbs-Brower Company, Inc.
Loblell Co.
The Moore & White Co.
D. J. Murray Mfg. Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
U. S. Rubber Co.
Valley Iron Works Co.
Waldron Corp., John
Wheeler Roll Co.

ROLL COVERS
The Goodyear Tire & Rubber Company
Stowe-Woodward, Inc.

ROLL HANDLING EQUIPMENT
Dilts Machine Works (Kohler Systems)

ROLL STANDS
Cameron Machine Co.
Dilts Machine Works (Kohler Systems)
Frank W. Egan & Co.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
John Waldron Corp.
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ROPE CARRIERS
Black Clawson Co.
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ROTARY KILNS
F. L. Smidth & Co.

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The Moore & White Co.
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Gibbs-Brower Company, Inc.
Moore & White Co.
Potdevin Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
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Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Company
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Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Gibbs-Brower Company, Inc.
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Bauer Brothers Co.
Carthage Machine Co.
Gibbs-Brower Company, Inc.

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Manchester Machine Co.

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Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
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Hamblet Machine Co.
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Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
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J. J. Ross Company
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American Cyanamid Company, Industrial Chemicals Division
Vanderbilt Co., R. T.

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The Sandy Hill Iron & Brass Works
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Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

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E. I. du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.

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John Waldron Corp.

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Thomas W. Hall Co.
J. J. Ross Company
Ross Paper Machy. Corp.
Shartle Brothers Machine Co.

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Crane Company
Dilts Machine Works
E. D. Jones & Sons Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
William Powell Co.
Record Fdy. & Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stickle Steam Specialties Co.
Taylor Instrument Companies
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Valley Iron Works Co.
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Nichols Engrg. & Research Corp.

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Gibbs-Brower Company, Inc.
Green Bay Fdy. & Mch. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

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American Cyanamid Company Industrial Chemicals Division
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WATER FILTERS
Green Bay Fdy. & Mch. Wks.

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Dilts Machine Works

WATER PENETRATION TESTER
Thwing-Albert Instrument Co.
Williams Apparatus Co., Inc.

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The Dorr Company
Hungerford & Terry, Inc.
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Wyandotte Chemicals Corp., Michigan Alkali Div.

WATER VAPOR CUPS
Thwing-Albert Instrument Co.

WAXES
Bunge Pulp & Paper Co.
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WAXING MACHINERY
Black Clawson Company
Dilts Machine Works
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
The Mayer Machine Co.
Moore & White Co.
Pusey & Jones Company
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WETTING AGENTS
American Cyanamid Company, Industrial Chemicals Division
General Dyestuff Corp.
Monsanto Chemical Company
Nopco Chemical Co.
Rohm & Haas Co.
Wallerstein Co., Inc.
Wyandotte Chemicals Corp., Michigan Alkali Div.

WHITE WATER HEATERS, AUTOMATIC SELF CLEANING TYPE
Davis Engineering Corp.

WHITE WATER TREATING EQUIPT.
The Dorr Company
Hungerford & Terry, Inc.
The Permutit Company
The Sandy Hill Iron & Brass Works

WINDERS AND REWINDERS
The Appleton Machine Co.
Black Clawson Company
Cameron Machine Co.
Dietz Machine Works
Dilts Machine Works
Downingtown Mfg. Co.
Frank W. Egan & Co.
Gibbs-Brower Company, Inc.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Kohler Systems
Langston Co., Samuel M.
Moore & White Co.
Potdevin Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
Ross Paper Machy. Corp.
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WINDING ROLL CHANGERS
Dilts Machine Works (Kohler Systems)
Egan, Frank W., & Co.

WIRE BRUSHES
M. W. Jenkins Sons, Inc.

WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Williams-Gray Co.

WIRE BRUSHES
Williams-Gray Co.

WOOD SPLITTERS
The Appleton Machine Co.
Carthage Machine Co.
The Permutit Company

INDEX TO ADVERTISERS

A

Alexander Brothers — —
Allis-Chalmers Mfg. Co. 8 & 13
Amercoat Corporation —
American Cyanamid Co., Calco Chemicals Division —
American Cyanamid Co., Industrial Chemicals Division —
American Leather Belting Assn. —
American Steel & Wire Co. 33
Ansul Chemical Co. —
Apmew, Inc. 56
Appleton Machine Co., The —
Appleton Wire Works, Inc. 59
Appleton Woolen Mills 52
Armco Drainage & Metal Products, Inc —
Armco Steel Corp. —
Askania Regulator Co. —
Asten-Hill Mfg. Co. —

B

Babcock & Wilcox Co. —
Bagley & Sewall Company —
Bahr Bros. Mfg. Co. —
Bailey Meter Company —
Bauer Brothers Co., The —
Beckman Instruments, Inc —
Beloit Iron Works —
Bird Machine Company —
Birk, F. Paul —
Bixby, R. W., Inc. 48
Black Clawson Company 6
Blaw-Knox Company —
Bowsher, N. P., Company —
Brown Company —
Bulkley, Dunton Pulp Co. —
Bunge Pulp & Paper Co. —

C

Cambridge Instrument Co. —
Cameron Machine Co. —
Canadian Newsprint Supply Co. —
Carnegie-Illinois Steel Corp. 33
Carthage Machine Co. 52
Chemipulp Process, Inc. —
Chicago Bridge & Iron Co. —
Ciba Company —
Clark Equipment Co. —
Classified Advertising 48
Cleveland Crane & Engrg. Co. —
Clinton Foods, Inc. 45
Cochrane Corporation —
Colledge, E. W. —
Columbia Steel Co. —
Combustion Engineering-Superheater, Inc —
Corn Products Sales Co. 51
Cowles Chemical Co. —
Cowles Company, Inc. —
Crane Company —
Crucible Steel Corporation of America —
Curlator Corporation 3

D

Davis Engineering Corp. —
Deitz Machine Works —
De Laval Steam Turbine Co. 37
DeZurik Shower Co. —
Dilts Machine Works 6
Dorr Company, The —
Dow Chemical Company —
Downingtown Mfg. Co. 7
Draper Brothers Co. 32
duPont, E. I., de Nemours & Co., Electrochemical Dept. —
duPont, E. I., de Nemours & Co., Dyestuffs Dept. —
duPont, E. I., de Nemours & Co., Grasselli Chem. Dept. —
duPont, E. I., de Nemours & Co., Polychemicals Dept. —
Durkee Company, The —

E

Ebasco Services, Inc. —
Efficiency Engrg. Co. —
Egan, Frank, & Company —
Eitzman Paper Core Co. 43
Elwell-Parker Elec. Co. —
English China Clays Sales Corp. —

F

Fairbanks, Morse & Co. —
Farrel-Birmingham Co., Inc. —
Ferguson, The H. K., Company 42
Ferro Enamel Corp. —
Fitchburg Screen Plate Co. —

G

Geigy Company 52
General Dyestuff Corp. —
General Electric Company 16 & 17
Gibbs-Brower Co. 48
Goldman, S. P., Paper Co. 45
Goodrich Chemical Company —
Goodrich Co., B. F. —
Goodyear Tire & Rubber Co. Back Cover
Goslin-Birmingham Mfg. Co. —
Gotham Ink & Color Co. —
Gottesman & Company —
Green Bay Fdy. & Works —
Grinnell Company, Inc. —
Guest, C. M., & Sons —
Gurley, W. & L. E. —

H

Hagan Corp., (Calgon, Inc.) —
Hall, Thomas W., Co., Inc. 48
Hamblet Machine Co. —
Hardinge Company, Inc. —
Harris-Seybold Co. —
Heppenstall Company —
Hercules Powder Company —
Heyden Chemical Co., Aktivin Div. —
Hooker Electrochemical Co. —
Huber, J. M., Corp. —
Hubinger Company, The 56
Hudson Sharp Mfg. Co. —
Hungerford & Terry, Inc. 55
Huyck, F. C. & Sons —

I

Industrial Brownhoist —
Insul-Mastic Corp. of America 19
International Nickel Co. —
International Wire Works 56

J

Jeffrey Mfg. Company —
Jenkins, M. W., Sons, Inc. —
Johnson Corporation, The —
Johnson, Alvin H., & Co. —
Jones, E. D., & Sons Co. —

K

Kalamazoo Tank & Silo Co. —
Kidder, Peabody & Co. 39
Kinsley Chemical Company 52
Knox Woolen Company —

L

Langston, Samuel M., Co. —
Lawton, C. A., Company —
Lindsay Wire Weaving Co. —
Link Belt Company —
Lobdell United Company —
Lockport Felt Co. —
Lodding Engineering Co. 31
Loeser, E. W., Company —
Lukens Steel Company 10
Lyddon Company 47
Lynch Corporation —

M

Magnus Metal Div., Nat. Lead Co. —
Main, Charles T., Inc. 52
Manchester Machine Co. —
McBride, Edward J., Company —
Mead Sales Company, The —
Meincke, A. M., & Son —
Meisel Press Mfg. Co. 46
Merrick Scale Company —
Michigan Steel Casting Co. 52
Monsanto Chemical Company —
Montague Machine Co. —
Moore & Munger —
Moore & White Co. —
Moorhead Electrical Machinery Co. —
Morden Machines Company —
Morey Paper Mill Supply Co. —
Morningstar, Nicol, Inc. —
Mount Hope Machinery Co. —
Murray, D. J., Mfg. Co. —

N

Nash Engineering Company 53
National Adhesives —
National Aluminate Corp. —
National Aniline Div., Allied Chem. & Dye Corp. —
National Starch Products, Inc. —
National Tube Co. —
National Wax Company —
Newport News Shipbuilding & Dry Dock Co. —
Niagara Alkali Co. 15
Nichols Engrg. & Research Co. —
Nolan & Wood Machine Co. —
Nopco Chemical Co. —
Northern Engraving & Mch. Co. —
Norton Company —

O

O'Donoghue, Roderick —

P

Paper & Industrial Appliances —
Paper & Pulp Testing Laboratories —
Paper Machinery Ltd. —
Parsons & Whittemore 47
Perkins, B. F., & Son Co. —
Perkins-Goodwin Company —
Permutit Company, The —
Photovolt Corporation —
Pittsburgh Plate Glass Co. —
Potdevin Machine Company —
Powell, William, Company —
Price & Pierce, Ltd. 54
Pulp & Paper Trading Co. —
Pusey & Jones Corp., The —

R

Raymond, Chas. P., Services, Inc. 48
Railway Supply & Mfg. Co. 55
Record Fdy. & Machine Co. —
Red Ray Manufacturing Co., Inc. —
Reichhold Chemicals, Inc. —
Reidel, Gus, & Son —
Reliance Elec. & Engrg. Co. 29
Research Corporation —
Restigouche Co., Ltd. —
Rice Barton Research Corp. —
Rogers, S. C., & Co. —
Rohm & Haas Company —
Roots-Connersville Blower Corp. —
Ross, I. J., Company —
Ross, J. O., Engrg. Corp. —
Ross Paper Machinery Co. 49
Rust Engineering Co. —

S

Sandusky Fdy. & Mch. Co. —
Shartle Brothers Machine Co. 6
Shuler & Benninghofen —
Sinclair Refining Co. —
Sirrine, J. E., Company 52
Smidth, F. L., & Co. —
Smith & Winchester Mfg. Co. —
Socony Vacuum Oil Co., Inc. —
Solvay Sales Div., Allied Chem. & Dye Corp. —
Sonoco Products Company —
Squier Corp., The —
Statement of Ownership —
Stebbins Engrg. & Mfg. Co. —
Stein, Hall & Co., Inc. —
Stickle Steam Specialties Co. —
Stowe Woodward Inc. —
Sun Oil Company —
Sutherland Refiner Corp. —
Swenson Evaporator Co. Front Cover

T

Taylor Instrument Co.'s —
Taylor Stiles & Co. —
Tennessee Coal, Iron & R. R. Co. —
Testing Machines, Inc. —
Texas Company, The 4
Texas Gulf Sulphur Co. —
Thomas Flexible Coupling Co. —
Thwing-Albert Instrument Co. —
Tide Water Assoc. Oil Co. —
Timken Roller Bearing Co. —
Tissu Converting Co. 56
Titanium Pigment Corp. —
Towmotor Corporation —

U

United Carbon Co., Inc. 53
U. S. Rubber Company 25
U. S. Steel Corp. 33
United States Steel Export Co. 33
United States Steel Supply Co. 33
Universal Oil Products Co. —

V

Valley Iron Works Co. —
Vanderbilt, R. T., Co., Inc. —
Virginia Smelting Company —

W

Waldron, John, Corporation —
Wallerstein Co., Inc. —
Walworth Company —
Waterbury Felt Co. —
Waterbury, H., & Sons Co., Inc. —
Weber, H. G., & Co., Inc. —
Wellman Engineering Co. —
Western Gear Works —
Western Precipitation Corp. —
Westinghouse Electric Corp. —
West Virginia Pulp & Paper Co. 54
Weyerhaeuser Timber Co. —
Wheeler Rolf Company 56
Whiting Corporation Front Cover
Williams Apparatus Co. —
Williams Gray Company —
Wyandotte Chemicals Corp. —

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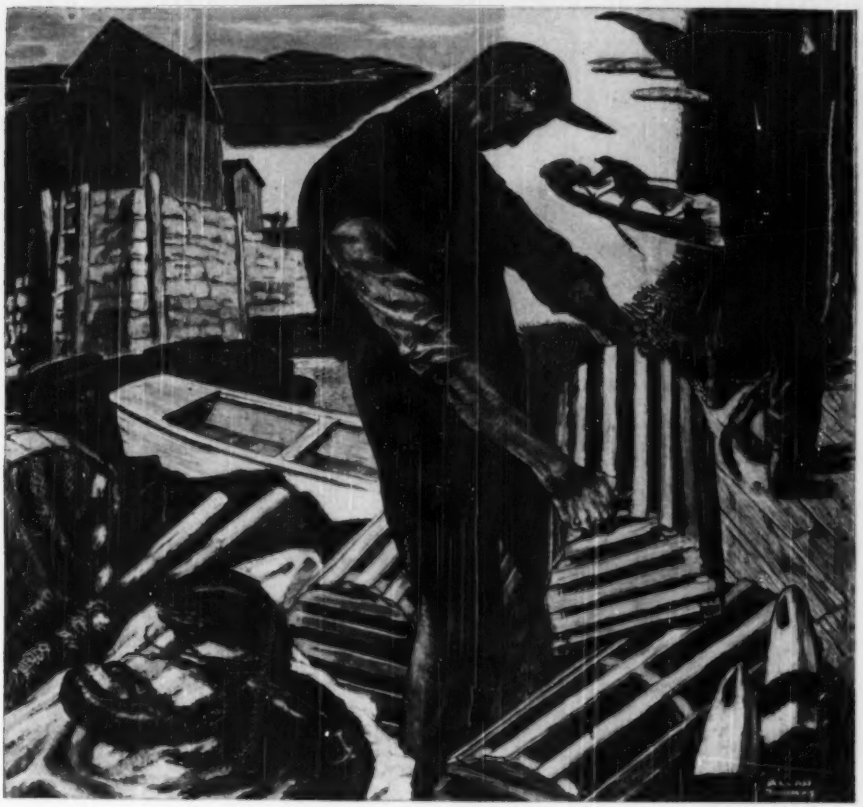

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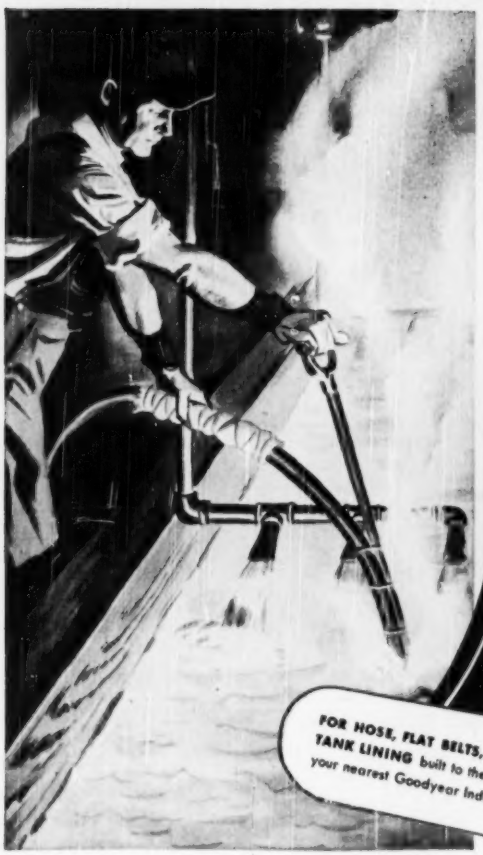

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